

PROCEEDINGS

OF THE

DORSET NATURAL HISTORY



ANTIQUARIAN FIELD CLUB.

EDITED BY

MORTON G. STUART,

Hon. Secretary.

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Surplus Copies of former "Proceedings" (Vols. i.—x.) at an average rate of 7s. 6d. a volume, and of "Spiders of Dorset" (2 vols., 25s.) are in the Treasurer's hands for disposal for the benefit of the Club's funds.

Any Member joining the Club and paying his subscription in a year for which no volume may be issued is entitled to a copy of the last previously issued.

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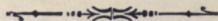
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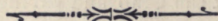
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The above list contains the New Members elected in 1890, up to date of publication.



The Proceedings
OF THE
Dorset Natural History and Antiquarian
Field Club

DURING THE YEAR 1889.

By M. G. STUART, M.A., F.G.S.

The work of the year has consisted of a meeting held at Dorchester on Tuesday, June 4th, a two days' meeting at Bridport on Wednesday and Thursday, July 10th and 11th, a meeting in Purbeck on Wednesday, August 7th, a meeting at Badbury Rings and Kingston Lacey on Wednesday, September 11th, a meeting in the County Museum at Dorchester on Wednesday, December 18th, and a second meeting in the Museum on Tuesday, February 25th. During the year some 50 new members have been elected, thus bringing the number up to a total of rather over 250. The tenth Volume of "Proceedings" was issued to members during the month of September; the increased size caused a rather heavy drain on the finances.

THE ANNUAL BUSINESS MEETING of the Field Club was held on June 4th at the County Museum, and was largely attended. Before proceeding to the special business of the printed programme, the Hon. Secretary of the County Museum, Mr. Albert Bankes, stated that the collection of Dorset Antiquities found by Mr. Cunningham had been offered to the Museum by the owner, who was leaving the district, for the sum of £250. The Council of the Museum felt that it was very important to secure the collection to prevent its going out of the County, and had, therefore, agreed to give the sum asked, but they had no money to pay for it. He, therefore, impressed the importance on members of the Field Club and others of using every means to obtain subscriptions towards the purchase of this valuable Dorsetshire collection.

The Treasurer, the Rev. O. P. Cambridge, read his Financial Report for the year 1888-9. He stated that the Balance-sheet was again a very satisfactory one. After paying the cost of printing and binding the IX. Volume of the "Proceedings," which was considerably larger than usual, as well as defraying the expense of a new wire guard for the

protection of the Roman Pavement at Preston, there remained a balance in hand of £15 0s. 9d. By past experience he computed their income for the coming year at £120, and the whole of this sum would be required to publish the forthcoming Volume (X.) of "Proceedings," which would be even larger than the previous Volume. With regard to their members, there had been elected 23 new members during the past year, whilst 8 had been lost. The total number of members at the present time was 210. Allusion was made to offer of exchange of publications with neighbouring societies. The Treasurer pointed out that a considerable addition to the income of the Society was derived from the sale of surplus copies of their annual publications; he, therefore, was not in favour of a general exchange, but recommended an exception in the case of the adjoining Hampshire Field Club. The report was adopted.

ELECTION OF OFFICERS.—The President, Treasurer, and Secretary were re-elected for the year.

NEW MEMBERS.—Six new members were elected.

THE CURATOR'S REPORT.—Mr. H. J. Moule, Curator of the Museum, read his report on the additions to the County Museum, and the work done there during 1888. In the Natural History Departments the following palæontological specimens were recorded:—*Hybodus strictus*, the central portion of a Belemnite. *Histionotus angularis*—very fine specimen from the Purbeck Beds of Swanage. *Elephas Meridionalis* bones and immense tusks from Dewlish. An excellent series of fossils from the inferior Oolite of Sherborne. *Microdon radiatus* from Purbeck. These were all the gift of the President. *Bos primogenius* frontal bones and horn cores, given by Mr. W. T. Fletcher. Various Dorset fossils presented by Mr. Cunnington. Amongst the additions to the collection of birds were a collection of 36 species, several of which are very rare, for instance, a little Bustard from Winfrith, the gift of Mr. Mansel-Pleydell. An Eider Duck from Portland, presented by Mr. T. B. Groves. A Goosander from Loud's Mill, presented by Mr. Taylor. In the Antiquarian Department the following acquisitions were recorded:—A flint celt from Dewlish, given by Mr. C. Kent. A denarius of Julia Mammœa, Mr. Pearce Edgecumbe. Several Roman coins from Winterborne Kingston Well, Mr. J. C. Mansel-Pleydell. Dorset tokens, Mr. C. H. Warne. Dorset tokens, Mr. J. S. Udall. A Quern stone from Purbeck, Mrs. Stilwell. A Roman food jar and patera from Portland, Mr. P. Weston. A silver penny (Henry II.) from West Stafford, Mr. Vidler. The Curator then drew attention to the great importance to the Museum of the acquisition of the Cunnington collection by purchase before alluded to.

The Library had received several additions during the year. Amongst these were old documents in the possession of the late Mr. Barnes, presented by his son the Rev. Wm. Barnes. The works of the Rev. W. Barnes, presented by the subscribers to his memorial. General Pitt-Rivers, F.R.S., had sent the second volume of his *Antiquarian Researches*. The last volume of the *Encyclopædic Dictionary*, presented by Mr. T. D. Galpin. Rogers' *Memorials of the West*, presented by Captain Phelps, R.A. Lilly's *Almanack for 1666*, by Mr. Montague Guest. Anyer's *Map of London, 1563*, by Mr. T. B. Groves. Saxton's and Blaeu's *Maps of Dorset* from Mr. W. G. Stone. *Dorset Folk Speech* from Mr. J. S. Udall. Reprint of the *Fire of Blandford in 1731* from the Rev. T. Cross, and other works. The Curator noticed the interest attaching to the Chinese collection presented by Mr. Williams, which had been re-arranged during the past year, as well as to cases containing the large collection of Dorset antiquities.

The President gave a summary of the work of the past year in place of an address. He stated that he could bear personal testimony to the zeal and attention displayed by the Curator of the Museum—Mr. H. J. Moule. He referred to the loss through death of a member of the Club—Mr. Damon—whose energy in collecting objects of geological and antiquarian interest in various parts of the globe was well known. His name was familiar locally in connection with the little book which he published on the *Geology of Weymouth*, whilst visitors to the British Museum would find it associated with a valuable collection of fossils brought by him from the Lebanon. With regard to observations in Natural History during 1888, in the County, through the kindness of Sir Richard Glyn, the appearance of the Great Bustard had been recorded. A keeper in the employ of Sir Richard Glyn stated that he first saw the bird on May 17th, 1888; it could run at a fast rate, but did not seem to fly with ease. The last time he saw it was on Compton Down; it then flew on to Melbury Down beyond Whitworth's bushes. It did not fly high, nor more than a mile from where it rose. The observer never approached nearer than 150 yards. The President stated that this description coincided with Mr. Chaffin's account of the flight of Bustards which he witnessed on the Downs near Woodyates Hill, near Salisbury, 100 years ago. An Eagle had been seen during the year in the neighbourhood of Morden Park. It had been stated that this bird, contrary to the usual habits of the Eagle tribe, frequented the gibbets of Mr. Radclyffe's kennels at Hyde and eat dead flesh. Mr. Portman, who has observed the habits of Eagles and other birds of prey in Norway, where they abound, saw the Eagle at Morden Park. He told

me he thought it was the Golden Eagle. His experienced opinion was strengthened by the account of the occurrence of a Golden Eagle shortly after on the Mendips, near Taunton. He was inclined to think it was the Golden Eagle rather than the White-tailed Eagle. Mr. Eustace Bankes said the Dartford Warbler had been seen this year in the neighbourhood of Corfe Castle and that a pair of Red Shanks had been seen at Studland. A pair of Red Shanks were bred at Arne during the past year. The Dipper, which had previously been confined to the Rivers Axe and Breedy, in the Western districts of the County, had now extended as far as Bindon. The Sand Grouse, which, in its various migrations to this country had never before reached so far West as Dorsetshire, appeared last year at East Stoke, near Wareham. All the specimens which had been found had been previously killed by coming in contact with telegraph wires. With regard to rare plants which had been found during the past year within the County, the President mentioned that Mr. Lester had found the *Anemone Appenina* in a wood in Purbeck. He was of opinion that this and other plants of a Northern type, which were found from time to time in Purbeck, were the remains of a flora which, with others, as the grass of Parnassus, has lingered in Dorsetshire since the close of the glacial epoch. Again, *Polypogon Monspeliensis*, an interesting Southern-typed grass, had been found in the vicinity of Littlesea. Botanical writers state that it is sometimes associated with an allied species, *Polypogon Littorale*. He and various eminent Botanists had often searched for this species, but without success. This last year, however, he had found it growing freely near Littlesea, with *P. Monspeliensis*. After a careful examination of the plant, he felt convinced that it was in reality a hybrid between *P. Monspeliensis* and *Agrestis alba*, and he would take this opportunity of drawing the attention of Botanists to the clearing up of this point. Another grass, *Deschampsia Setacea*, which had previously been found in Hants, had during the year been found in Dorsetshire for the first time. The President, then drawing attention to some antiquarian relics which were exhibited on the table, stated that they were found in a Roman Well, discovered during the preceding autumn at Winterborne Kingston (a full account of the discovery of this well and the objects obtained from it will be found at p. 1 of the volume). Another discovery of an antiquarian character had been made during the past twelve months near Creech Grange, on the property of N. Bond, Esq., a member of the Club. It consisted of a Roman Pavement of a rather rough style of design and workmanship. Amongst geological discoveries within the County he wished to draw

attention to the recovery of the remains of an interesting Saurian *Cimoliosaurus* (described at p. 171, Vol. X.) It was found by Mr. N. M. Richardson from the Oxford Clay near Weymouth, also of a very fine specimen of a Ganoid—*Histionotus*—from the Purbecks at Swanage, and now deposited in the County Museum (described at p. 91).

The Rev. O. P. Cambridge, thanking the President for his able *resumé*, stated that from the accounts of the Eagle which had been seen in the County he was of opinion it was a white-tailed eagle. The Dartford Warbler he had not seen on the heath where it formerly lived, until a severe frost some years ago destroyed it. Some specimens of the Sandgrouse had been killed at Binegar, and one of these is now in the possession of Oliver Farrer, Esq., of Binegar House. It seemed to have settled in the County, some specimens having been seen through the winter. He referred to the Oak Caterpillar, which was stated to be eating up the oak leaves during the present season, and said that there were in reality several species of caterpillars engaged in this work of destruction. (These were stated by the Treasurer to be, in his district, where a similar devastation was in progress, chiefly those of the following :—Lepidoptera, *Hibernia defoliaria*, *H. aurantiaria*, *H. pogemmaria*, *Tortrix viridana*, and *Cheimatobia brumata*. He also stated that there were numerous parasitic Hymenoptera (*Ich-Haimonidæ*) carrying on their work of destruction among the caterpillar pests, so that there was no reason to fear a worse scourge next year as the result of this year's ample brood.) While some parts of the woods were quite free from them, in others the foliage of the oaks, beeches, and willows had suffered greatly, whilst the hazels would be almost killed by them. Mr. E. Bankes mentioned that he had seen a Golden Oriole near Corfe Castle in the Spring.

THE SUMMER MEETINGS OF THE CLUB.—The question of the programme of meetings for the year was next discussed at some length. A ballot was eventually taken, resulting in a decision to hold a two days' meeting at Bridport in July, a meeting in Purbeck in August, and one at Badbury Rings in September. The meeting adjourned for luncheon at 1.30, and at 2.30 the majority of members were conveyed in carriages to Ridgeway Hill, where certain geological sections of interest were examined. The afternoon was lovely, and the view of Weymouth Bay and Portland Isle was very clear. The town of Dorchester was reached in returning about 4.30. Another section of the party with antiquarian tastes visited Stinsford Manor House under the guidance of the Rev. C. R. Baskett, who entertained them at tea at the Vicarage subsequently. This brought the day's meeting to a conclusion.

THE BRIDPORT MEETING.—A two days' meeting was held at Bridport on Wednesday and Thursday, July 10th and 11th, and was largely attended by members and their friends. The Bull Hotel formed the head-quarters of the Field Club during the meeting, of which the landlord is Mr. Knight, who took great pains to carry out his part of the meeting successfully. The printed programme for Wednesday announced a long drive through the villages of Mapperton, Beaminster, and Netherbury, but the morning brought with it torrents of rain, and the expedition seemed quite impossible. However, a resolution was made to face the weather, and the start was made at 12 o'clock, only a little after the printed time, and the result was that before 1 o'clock the weather had cleared up, and a delightful drive was obtained. The Manor House at Mapperton was reached by 12.30; there a kind welcome was given by the Rev. H. Paulet Compton, the uncle of the lord of the manor and incumbent of the living. Mapperton House is of Tudor style; its front remains unaltered and is very picturesque. Over the entrance doorway appear the arms of the Brodrigg family, carved in stone. The party was conducted through the house by the Rev. P. Compton, who pointed out especially the carved Tudor ceilings of geometrical design, and an old silver chalice and an alms dish belonging to the church. In the hall the Rev. P. Compton read a paper descriptive of the house, showing that the manor now consisted of two farms—Mapperton and Cotleigh, and about 60 acres of glebe land belonging to the Rector. There was also a mill, now destroyed, and farmhouse and four cottages called Lamytte. Mapperton and Cotleigh were formerly manors, but the tenants dying of the plague in 1666 the tenements fell into the lord's hands and had been pulled down. On Warren Hill, in the parish of Netherbury, human bones were frequently dug up, which were supposed to be the bones of the parishioners of Mapperton who died of the plague, and were buried there in sight of Netherbury Church, to which place it was presumed the distemper did not reach. In Domesday Book Maperton and Malepere-tone were surveyed in two parcels; the first North Mapperton and manor and farm in Beaminster parish, and the other at Mapperton. The family of the Bretts or Bryttes possessed Mapperton very early. The pedigree of the Brett family showed that the heiress of this family brought this estate to the Morgans, of Morgan Hayes, county Devon—an ancient family seated there in the reign of Henry I. The pedigree of the Morgans was then traced, and the writer showed that Robert Morgan, Esq., had the following patent granted by King Henry VI., 1424, who was then a minor:—"Henry, by the Grace of God, King of England and

France, Lord of Ireland, to all manner of our subjects, as well of spiritual preeminence and dignitie as of temporale auctoritie, these our letters, hering or seeing, greeting. For as moche as wee be credibly informed that our well beloved Robert Morgan, Esquire, for diverse infirmities which he hath in his hedde, cannot conveniently, without his grete danger, be discovered of the same; thereupon we, in tendre consideration thereof, have by these presents lycensed hym to use and were his bonnet on his head at al tymys as wel in our presence as elsewhere at his libertie. We therefore wol and commaunde you and every one of you to permyte and suffer hym soe to doo without challenge or interrupcion to the contrary as ye tender our pleasure given under our signet at Morende the 25th day of July in the third year of our reigne." The property came through the female line to the family of Brodrepp, which seemed to have derived its name from Bawdrip, a village near Bridgwater. From the Brodrepps the property came to Mr. Compton's family by a Miss Eleanor Brodrepp marrying George Richards, of Longbredy, his (Mr. Compton's) great grandmother being a Miss Richards.

Mr. J. S. Udall then supplemented this paper by a description of the armorial bearings of former owners contained in or upon the walls of the house and in the stained glass windows of the church adjoining. As this heraldic sketch was chiefly drawn from the account contained in "Hutchins' History of Dorset" it is only necessary to notice it here. A question was asked as to the Court Rolls of the Manor, which was stated in Hutchins to have been preserved from the 18th year of Edward I. The Rev. P. Compton said he knew nothing of their existence. The President then proposed a vote of thanks to the Rev. Paulet Compton on behalf of the Society for allowing them to pay a visit to his interesting house. Refreshments were previously provided by Mr. Compton, and the church adjoining was subsequently visited. After leaving Mapperton the route lay to Beaminster, which was reached soon after 2 p.m. Here luncheon was provided at the White Hart Hotel, the members present being slightly over 50. Twelve new members were elected to the Club. After luncheon some of the members paid a hurried visit to the parish church, dedicated to the Nativity of the Blessed Virgin Mary. It is built in the Perpendicular style. The tower, probably the finest in Dorset, nearly 100 feet high, contains eight bells, and is adorned with well executed images of the Virgin, the Crucifixion, the Resurrection, and Ascension.

Parnham Manor House, the seat of Lady Oglander, was reached on foot from Beaminster. This fine old house, which has been considerably altered both within and without, is well situated in a fine park. A short

paper was read by Mr. J. S. Udal in the hall, a *resumé* of the accounts contained in Hutchins' and Coker's works, describing the principal features of the house and the families in whose possession it has been. It is sufficient to notice here that Parnham formerly belonged to the Strode family; on the death of Thomas Strode in 1764 the estate devolved to Sir John Oglander, of Nunwell, in the Isle of Wight, who married a daughter of Sir John Strode. The arms of Trenchard, Wadham, Strangways, Strode, Poulett, etc., are contained in the head of each light of the hall windows. Over the hall chimney are the arms of Oglander quartered with Strode, impaling the Royal arms of the Fitzroys. In the drawing room is an original portrait of Richard, Lord Cromwell, Vicar General of Henry VIII., and another of Gregory, Lord Cromwell, his son.

Leaving Parnham, the drive thence led to Netherbury, which was reached shortly after 4 p.m. Here the church, which is of Perpendicular style, contains a marble tomb with an effigy surmounted by an original helmet, to the memory, it is supposed, of one of the Mores, Barts., of Melplash, and a very fine inlaid pulpit of Jacobean date. The Vicar, the Rev. W. W. Gildea, brought from the parish chest a number of ancient deeds and charters dating to the reigns of Ed. I., Richd. II., Henry IV., and Elizabeth. By the kind invitation of the Vicar and his wife the members partook of tea at the Rectory.

Melplash Court was next visited. This is an old Tudor house, now used as a farmhouse, and the occupier, Mr. E. G. Legg, conducted the members round the building. Over the chimney piece of the parlour, carved in oak, are the arms quarterly—1 and 4 England and France, 2 Scotland, 3 Ireland, and the motto of the same is on the scroll beneath. At the sides are the initials J. R. Over the tall chimney piece in stucco are the arms of the Poulets, and below on a scroll, "Ames Loyaulte." The chapel, now used as a dairyhouse, the barn with its simple braced and strutted oak roof, and the old stone dovecote formed other objects of interest. After leaving Melplash Court the outdoor programme for the day was completed and Bridport was reached about 6.15.

At 6.30 p.m. Mr. W. Colfox, of Westmead, entertained the whole party at a cold repast in the Town Hall of Bridport, at which about 60 persons were present. After the repast was concluded, the President having proposed the customary toast of the Queen, begged to return thanks, on behalf of the members present, to Mr. Colfox for his hospitality.

At 8 p.m. a special evening programme had been prepared by the committee of the Bridport Institute as an additional welcome to the members of the Dorset Field Club. The ground floor of the Institute

Buildings had been set apart for an exhibition of objects of local antiquarian or scientific interest. Amongst these were included the Borough Maces, Borough Charters, and grant of arms, the doom or dome book containing entries from temp. Rich. II.—1817, record and account books of religious fraternities and various ancient deeds belonging to the Corporation, Coker's Survey of Dorset, old pottery of historic interest collected in the neighbourhood lent by Mrs. Colfox, collection of Roman and pre-historic remains found in West Dorset, collection of local flowers and ferns lent by Miss Reid, a collection of local butterflies and moths lent by Mr. J. T. Male, coins of Constantine the Great lent by Mr. J. T. Stephens, &c., &c.

The President of the Institute opened the meeting by welcoming the members of the Dorset Field Club. He then introduced Mr. Muir Lester, of Lyme Regis, who gave an address on the group of organisms, formerly classed in Sach's Botany as *Myxomycetes*, in the study of which he had been engaged for some time, and had been enabled to produce some valuable results in classifying the various forms. The individuals of the group, several of which he brought to the meeting enclosed in glass cells, he had obtained from the surfaces of dead leaves and decaying wood in the woods in autumn. After his excellent address Mr. Lester exhibited one or two forms under the microscope, and a series of excellent drawings made by himself illustrative of the leading forms of the whole group. The printed programme specially prepared for the evening meeting included the following papers on subjects of local interest:—

“The Bridport Corporation Records,” by Mr. T. Wainwright, of Barnstaple.

“Old Bridport,” by Mr. W. Colfox, B.A.

“Local Geology,” with special reference to the coast excursion of the succeeding day, by the Rev. H. Shaw Solly, M.A.

“Local Flora,” by Miss F. Reid.

“Local Butterflies,” by Mr. J. T. Male.

These were read in the upper room of the Institute, which is used as an Art School, the walls of which are hung with pictures and engravings of local subjects. At the close of the meeting the President returned thanks to the Council of the Bridport Institute on behalf of the Dorset Field Club for the excellent programme they had provided for them that evening.

The meeting closed at 10.30 p.m.

THURSDAY, JULY 11TH, looked far more propitious than the preceding day, and several members joined by the morning train who had been

deterred by the bad weather of Wednesday. A start was made from the Bull Hotel at 10 a.m., and a picturesque drive of an hour brought the party, numbering 60 at least, to Stanton St. Gabriel, which is close to the coast. Here the party divided; the carriages were abandoned, and a small body, under the guidance of Sir Frederick Weld, taking the route along the cliffs, walked to the top of Golden Cap and thence to Seatown. This may be considered the Botanical Section. The rest of the party, under the guidance of the Rev. H. S. Solly, took the route along the beach to Seatown for the purpose of examining the quite unique sections of the Liassic beds exposed in the cliffs. The printed programme for the day contained the following note, which may be of use for future pedestrians:—"The walk from Stanton St. Gabriel will afford an opportunity of examining the Belemnite and Green Ammonite beds of the Lower Lias (Zones of *Am. Henleyi* and *Latacosta*), and by extending the walk a short distance east of Seaton to Down Cliff the whole of the Middle and Upper Lias may be seen, including the Three Tiers, the Starfish Bed, and the Junction Bed. A fine view may also be obtained of the Midford Sands, Inferior Oolite, Fullers' Earth, Forest Marble, and Green Sand." At various points along the beach Mr. Solly drew attention to the features of these beds presented in the cliffs above. To Botanists an interesting plant—viz., *Epipactis palustris*—was found by Miss Ward, of Gussage. And several specimens of a rare and local beetle, *Cicindela Germanica*, were taken by the Rev. O. P. Cambridge. On arrival at Seatown the party drove to the parish of Chideock, where Sir Frederick Weld invited the members to luncheon at the Manor House. The interior of the house, containing collections of weapons and various native productions from the Malay Peninsula, New Zealand, and other places, proved of great interest, as did the private chapel attached to the house. After the President had returned thanks for Sir F. Weld's hospitality the drive was resumed towards Bridport, where Mrs. T. Colfox invited the party to tea in her garden. Subsequently the parish church of Bridport, the old castle, and dungeons were visited by some of the members. The party broke up about 5 p.m., the majority leaving by the evening trains, and this brought a thoroughly successful two days' meeting to a close.

THE PURBECK MEETING.—A meeting was held in the Isle of Purbeck on Wednesday, August 7th, in lovely weather. The rendezvous was Corfe Castle Railway Station on the arrival of the 11.38 train. Here so large a party congregated that the capabilities of transport were taxed to the uttermost, and this number increased as the day advanced, until

the party reached considerably over 100, the largest gathering which had ever taken place at a meeting of the club, the more remarkable in such a remote district as Purbeck. The fine church of Kingston, recently erected by Lord Eldon, by the designs of Street, was first visited. Thence the route lay chiefly across the fields, partly by carriage and partly on foot, to Swyre Head, the loftiest spot in the district, from which a magnificent view lay extended in all directions. Those to whom the district was new had every reason to congratulate themselves on their good fortune in having such clear weather to thoroughly enjoy it. Eastwards the Isle of Wight was clearly visible, and the Hampshire Coast, northwards the high chalk downs of Wiltshire, the hills of Somerset, were visible, whilst closer at hand lay the fine coast scenery of St. Alban's Head, Kimmeridge Bay, Lulworth, Weymouth Bay, and the Isle of Portland; on the opposite side lay the ramifications of Poole Harbour and the ruins of Corfe Castle. After enjoying this extensive prospect for a few minutes a steep descent into the valley below brought the party to Smedmore House, where they were greeted with a warm welcome by the owners, Colonel and Mrs. Mansel. Shortly after their arrival the members of the Field Club and other friends were entertained at luncheon in the dining room, after which they adjourned to the garden, where, under the shade of the trees, they listened to a paper of the President on the subject of "The Clavell Family and their connection with Smedmore House," of which the following is a *resume* :—

"Hutchins says the family of Clavell can boast an antiquity not to be equalled in the county, and very rarely in any other. Walter de Clavell probably accompanied the Conqueror in his invasion of England, for at the time of the compilation of the Domesday Book he was tenant-in-chief of five lordships in Dorsetshire. Sir William Clavell held the command in Ireland during the troubles towards the close of Queen Elizabeth's reign; then he was created a knight and a banneret. He was a great but unfortunate proprietor. His projects, and the prosecutions resulting from them, involved him in losses amounting to £20,000, owing to which he was obliged to sell and mortgage a great part of his estate. His nephew and heir apparent, the son of his last brother, having fallen very early in life into evil ways, was apprehended for a robbery on the highway about the commencement of the reign of Charles I. and, with his associates, condemned and convicted; but he experienced the Royal clemency through the special intercession of the Queen. After he had received his liberty he presented an address to his honourable friend, his ever dear and well approved good uncle, Sir William Clavell, knight, banneret, asking forgiveness. This address took the form of a poem of

considerable length, entitled "The recantation of an ill life, or the discovery of the highway law, with vehement disuasion to all (in that kind offenders)." In the flysheet of the copy of this poem in the President's possession, his relative, the late Rev. C. D. Bingham, wrote the following epigrammatic lines :—

"Thy famous ancestor, John Clavell,
Made the highways unsafe to travel,
But I in this more bright and moral day
Reform young thieves beside the Queen's highway *
And thus his evil deeds I try to cancel
With all my might, John Clavell Mansel."

Coker, writing in 1732 of Sir William Clavell and Smedmore, speaks of the little new house which he built and beautified with pleasant gardens, and especially of "the allom works which he put on tryall, and which, when he brought them to a reasonable perfection were seized to the King's use. In place of which he then set up a glasse house and salt house for the manufacture of white salt from sea water by boiling, and further, at his own charge, piled up and built a little key for small barks to ride in. The fire in the glasse house was maintained by a kind of blueish stone, which, on burning, yielded such an offensive savour and extraordinairie blackness that the people labouring about these fires were more like furies than men." The paper subsequently traced the descent from Sir William Clavell to George, the last in the male line, who died in 1774, thence through his sister, who married William Richard, of Warmwell, to their daughter, Elizabeth Margaretta, married to Edmund Morton Pleydell, whose daughter, Louisa, married John Mansel, son of Sir William Mansel, of Iscoed, co. Camarthen, whose son, Colonel George Mansel, was now in possession of the estate."

At the close of the paper Lord Eustace Cecil returned thanks on behalf of the members to Colonel and Mrs. and the Misses Mansel for the kind hospitality they had received. The afternoon was now passing, and a section of the party were anxious to catch the 5.13 train at Corfe Castle. Much of the programme still remained to be carried out, and an immediate move was made to Clavell's Tower, situated on a prominent point on the cliff, overlooking Kimmeridge Bay, from which the series of clays, shales, and limestone bands, composing the formation of that name, lies spread out before the eye. Here a section of the party left, returning to Corfe Castle station, where they took the train. After their departure the President read a paper on the subject of the Kimmeridge clay, which will probably appear in full in a future volume of the Proceedings of the

* Referring to the President's Reformatory School, near the main road between Winterborne Whitchurch and Milborne St. Andrew.

Society. The paper described the subdivisions of the Kimmeridge clay formation, the characteristic fossils by which the separate zones were determined, the comparison of the section exhibited in this, the typical area with the sections occurring in Portland and in the counties of Wiltshire, Oxford, and Buckinghamshire. The author then passed on to describe the chemical composition of the shales, and cement bands and their economic value, and ended by giving the history of the various attempts which have been made to work the beds in Kimmeridge Bay during the present century. Mr. T. B. Groves prepared a paper which described the manufacture of alum from the shales in which it is found—particularly those at Kimmeridge Bay—at Holworth, belonging to the Gault Clay, and at Whitby, in Yorkshire, where they occur in the Liassic series. After this excellent series of papers the time had arrived when the party had to leave Clavell's Tower. A walk of a mile brought them to Kimmeridge village, where they regained the carriages and drove to Corfe Castle rectory. Here they were entertained at tea in the beautiful garden by Mr. Eustace Bankes, and subsequently reached Corfe railway station in time for the 6.47 train after a long and successful day.

THE BADBURY MEETING.—A meeting was held at Badbury Rings and Kingston Lacy on Wednesday, September 11th, and again the weather proved all that could be wished. A large party, numbering upwards of 120 members and friends, assembled at the ancient encampment of Badbury Rings about 12 o'clock, some having driven there in their own private carriages, whilst arrangements had been made for conveyances to bring those reaching Wimborne by the various trains. On arriving at the Rings the President conducted the party to the west side, where he pointed out the course of the Roman *Via Iceniana*, which extended from Yarmouth to Exeter, and crosses the chalk down at this spot. Its course is clearly visible by the ridge or dorsum of the road, which, rising above the general level of the turf, is formed of flints and pebbles from the Woolwich and Reading beds, of which an outlier exists at Badbury.

At a short distance the course of another Roman Road was pointed out crossing the *Via Iceniana* almost at right angles. This Roman Road, which had been discovered two summers before and described in Vol. IX. of the "Proceedings," is considered to be of later date than the *Via Iceniana*, and, in the opinion of the President, was probably constructed for the purpose of transporting minerals from the Mendip Hills to Hamworthy or Poole Harbour, where they would be shipped to the

Continent. It can be traced along the valley of the Tarrant northwards to Ashmore and Donhead, beyond the Wiltshire boundary, and southwards through Kingston Lacy Park to the sea. The presence of the Tertiary Beds in this locality was evidenced by the old oak trees which grew upon them.

Returning to the earthwork, the party seated themselves on the top of the Rings, where a paper, written by Dr. Wake Smart, of Cranborne, was read, in his absence, by the Rev. O. P. Cambridge. This paper will be found at p. 16 of this volume. A letter was then read from Mr. T. B. Groves, of Weymouth, who was unable to be present, which was as follows:—"I wished to point to an observation I made some years ago at Badbury. It was late in the afternoon when the shadows were lengthening and small surface indentations were rendered visible. I was on the Blandford road, when, on stopping to look at the Rings, I saw distinctly marked on the turf a zig-zag line leading up to the fortification, which was apparently a trace of a covered pathway leading to the hill. I also noticed that the sides of the zig-zag overlapped. The next time I passed I tried to re-observe it, but failed, as in the mean time the field had been broken up to arable. Perhaps on the spot and on the higher part of the hill, which has been undisturbed, traces might still be found."

Dr. Wake Smart's paper led to a prolonged discussion. The President, in proposing a vote of thanks to the author for his paper, said he was glad he still maintained his view that Badbury was the true site of Vindogladia of Antonine's *Iter* xv., about which there had been a controversy since the days of Stuckely. The site had been assigned to Gussage Cowdown, where there were extensive earthworks and signs of occupation. In support of this view it was necessary to assume the omission of a station in the *Iter* and *Ibernum*, a place referred to by the anonymous geographer of Ravenna, in his list of British strongholds, was assigned to Winterborne Kingston Down, which also presented extensive earthworks. The late Mr. Barnes showed conclusively, in his, the President's, opinion, that *Ibernum* must be referred to Iwerne, which by the change of d for b would account for the name. Dr. Smart proposed the addition of x to the numerals prefixed to Vindogladia and Durnovaria (Dorchester) of Antonine's *Iter*, and this made the distance between Sarum and Dorchester $43\frac{1}{2}$ Roman miles, which was the actual distance. It might be inferred that Badbury camp had some relation with the *Via Iceniana*. The Witchampton road as marked in Mr. Warne's map is erroneously placed, and is evidently the same as the one referred to above, as the road which had been inspected by members of

the Club that morning crosses it within 200 yards of the Camp. The Rev. Sir Talbot Baker said he was surprised Dr. Smart did not allude to the battle of Badon Hill, or Baddonbyring, which Dr. Guest placed at Badbury. The battle was a decisive one, for by it King Arthur rolled back for a time the tide of Saxon Conquest. Sir Charles Robinson said if by a Roman Station was meant a habitable town he did not see how Badbury could be Vindogladia, since there was no water obtainable within the earthworks. He believed the abandonment of Old Sarum was attributed to the difficulty of carrying water to the place, and that in the event of people taking up their quarters in such camps for only a short time such a difficulty would be met with. The President said that a similar objection might be made to all the fortresses of the county, Hod and Hambledon, for instance, where there must have been greater difficulties of supply than here. He did not consider a station such as those referred to in the *Iter* necessarily implied a residential colony, but a hill fortified by earthworks as a protection from raids of hostile tribes and a place of safety for farmers of the neighbourhood and their flocks in times of disturbance. This ended the discussion.

The party then made their way, some in carriages and some on foot, to Kingston Lacy House, where they were cordially welcomed and most hospitably entertained at luncheon by the owner, Mr. W. Ralph Bankes and Miss Bankes. The number of members present and their friends had now reached 120. When luncheon was over the President proposed "The health of Mr. Bankes" for his hospitable welcome to the Field Club, and, referring to the statues they had noticed on the staircase of Sir John Bankes and Lady Bankes, the heroine of Corfe Castle, said it was fortunate Sir John and his Lady were in possession of the Castle at that eventful period. Since then the family of Bankes had taken a leading part in the county; many of them had represented the county in Parliament, the last being Mr. Bankes' grandfather. The guests were then conducted through the various rooms by Mr. Bankes, who described the various objects of art which render Kingston Lacy famous. A description of these will be found in the paper written by Mr. Bankes, of Kingston Lacy, and included in the present volume at p. 159. The visit of the Society terminated at half-past four, when the party left in carriages for Wimborne Station. This concluded a most successful day and with it the outdoor excursions of the year.

A COMMITTEE MEETING was held at the County Museum Buildings at Dorchester on Wednesday, December 18th, at 11 a.m. The subjects under consideration were the Table of Contents for Vol. XI. of the Field

Club "Proceedings" and the question of drawing out a set of Printed Schedules for recording the annual observations of Flowering of Plants and the appearances of Birds and Insects throughout the county. A sub-committee of six members was arranged for the purpose of devising the most suitable schedule for the requirements of Dorsetshire, which should be issued to members as soon as possible.

A WINTER MEETING of the Society was held the same day at 12 o'clock, which was very largely attended, although the weather was most unpleasant. Twelve new members were elected to the Society. The question of the exchange of the Publications of the Field Club were then brought before the meeting. Invitations for an exchange of publications were announced from the Royal Archaeological Institute of Great Britain and Ireland and from the Royal Historical and Archaeological Society of Ireland. It was eventually decided to agree to these exchanges, the volumes so received to be placed in the Library of the County Museum. The President noticed the discovery amongst a collection of bones obtained from the Kimmeridge Clay, near Gillingham, and deposited in Museum by the generosity of Mr. Freame, of a humerus of a Saurian, belonging to a genus which had been separated from that of *Ichthyosaurus* only a year or two since by Professor Seeley. This new species Professor Seeley had named *Ophthysaurus*, the peculiar appendages of the eye being one of the leading features of the Ichthyopterygian Family. The President said he hoped to be able to describe this interesting discovery more fully during the coming year. He also referred to the valuable collection of fossils formed by the late Mr. Damon, F.G.S., of Weymouth, which had been purchased from his executors by the generosity of residents in the County of Dorset and deposited in the County Museum. The printed programme for the day included six papers:—Mr. Eustace Banks read the first paper, on various plants found in flower in the neighbourhood of Corfe Castle during the month of December, 1888. This paper, describing some of the results of the exceptionally mild winter of 1888, will be found at p. 82 of the present volume. In the discussion which followed the President referred to the absence of flowers on flowering trees in the previous spring. The Rev. G. Thompson mentioned the scarcity of cyder in Herefordshire through the failure of the apple crop. The Rev. O. P. Cambridge gave evidence of a similar character in reference to his own orchard at Bloxworth. Mr. H. Moule noticed a scarcity of acorns; Mr. Richardson of haws; Mr. Groves of the failure of the apple crop in Normandy. Mr. T. B. Groves, of Weymouth, then read a paper which had been prepared some months previously by the late Mr. R. Damon on

the very fine example of a Roman Amphora which he discovered in the Backwater at Weymouth. The Amphora is now preserved in the County Museum, and is one of the finest in the country. This paper, with an illustration, will be found at p. 88 of this volume. The President then read a paper on the subject of a Roman Well which had been discovered on his property at Winterborne Kingston some months previously. This paper is given at p. 1. Several objects which were discovered in the well were exhibited on the table, amongst which were the series of Roman coins, of which a plate is given in the paper, and several fragments of Roman pottery and various bronze ornaments. The paper led to a discussion. Colonel Solly then exhibited various Shakespearian relics that formerly were the property of David Garrick, and which came into his possession through the executor of Garrick. The subject of printing a set of schedules for recording observations in Natural History for distribution throughout the County was then introduced by the Secretary. After some discussion the proposal was agreed to, and a sub-committee, consisting of the President, Treasurer, Messrs. E. Bankes, Moule, and Richardson, together with the Secretary, were appointed to decide upon the most suitable form of schedule for the requirements of the County.

An adjournment for luncheon was then made at 2 p.m., after which an addendum to the paper on Badbury Rings, by Dr. Wake-Smart, was read. This will be found incorporated with the former paper in the present volume. A paper on "*Histionotus Angularis*," by the President, was then read by the Secretary. The fine example of this rare fish that formed the subject of the paper is now deposited by the generosity of the President in the Museum.

The last paper on the programme was by Mr. H. M. Richardson on the chief peculiarities of the Lepidopterous Fauna of Portland. This is given at p. 46. Proposals were made, and agreed to, for the exchange of the Club's publications for those of the "Royal Archæological Institute of Great Britain and Ireland" and of the "Bristol Naturalists' Society."

A SECOND WINTER MEETING was held at the County Museum on Tuesday, February 25th, at twelve o'clock, which was largely attended. The President, in opening the meeting, congratulated the Club on the progress they were making not only in their numbers, which now reached 250, but in the increased recognition by the scientific world which their publications were meeting with.

Ten new members were then elected to the Field Club.

The Secretary laid on the table the new Schedules for recording the Flowering of Plants, Appearances of Birds and Insects, Annual Rainfall and Meteorological Phenomena throughout the County, for which the Sub-Committee had been appointed at the December meeting.

The subject of the Returns of the Prehistoric Monuments of the County was introduced by the Secretary. After a prolonged discussion it was decided as a preliminary step to purchase the New Ordnance Map of the County on the 6-inch scale at a cost of £10 or thereabouts. This map should be located in the County Museum, provided the Museum Committee gave their consent; the cost for the said map to be defrayed by private subscriptions. The next step after the purchase of the map would be that of correcting errors and omissions in the matter of the Prehistoric Monuments of the County. The President then referred to an interesting interment which had been discovered in a fissure at Portland and brought to the notice of the Club through Mr. Richardson, by Colonel Russell, R.E., Commandant of the District. There were four individuals buried there, a man and woman and two children, and, associated with them, about 10½ feet below the surface, were the remains of various animals of the chase, which had been pronounced by Mr. Lydekker to be those of the Roe Deer, Wild Boar, and of Fish—Bream and Limpett. In the environments of the Fissure were some well formed flints.

The President then read the first paper on the programme for the day, "On *Ophthalmosaurus Pleydelli* (Lydekker), a new *Ichthyosaurus* from the Kimmeridge Clay, Gillingham." Mr. H. J. Moule read a paper on "A Book called Dorchester Domesday," in the possession of the Corporation of the Borough of Dorchester.

Mr. T. B. Groves read a paper "On the Telegraph in Dorset before the Days of Electricity," descriptive of the method of signalling adopted at the telegraph stations at the time of the threatened invasion of England at the commencement of this century. Since this paper was read at the meeting the author has received various communications on this subject, which have been added as an appendix to the original paper, and will be found at p. 135 of the volume.

Reference was made by the Rev. H. S. Solly to an illustration which had recently appeared in the *Daily Graphic*, of Golden Cap in flames, stating this to be a common occurrence. Mr. Solly said that the writer had evidently mixed up two events. In the neighbourhood of Charmouth there was a recorded instance of spontaneous combustion of the cliffs in the year 1751, and at Holworth Cliff, Weymouth Bay, in the year 1841.

The Treasurer read a paper "On the British species of *Phalangidæ* or Harvest Men."

Mr. H. M. Richardson read papers "On the Description of two species of Lepidoptera from Dorset new to Science" and "On a case of the substitution of a wing for a leg in a Moth—*Zygæna Filidendulæ*," the latter of which gave rise to a prolonged discussion. The remarkable specimen in question was exhibited by the author.

The Rev. H. S. Solly read a "Note on a fault in the Cliffs West of Bridport."

The Treasurer read a paper entitled "Notes on some Habits of the Squirrel." This paper was followed by some discussion. The eight papers above mentioned will be found included in the present volume.

This brought the meeting to a close, and with it the work of the year 1889.





Omitted by mistake from Vol. X.

New Members elected in Season 1888-89.

AT DORCHESTER MEETING, JUNE 6TH, 1888.

Eustace Radclyffe, Esq.	Hyde, Wareham
William Pye, Esq.	Weymouth
Colonel Mount Batten	Upcerne
Miss Mount Batten	Upcerne
Edmund Smith, Esq.	Preston, Blandford
Rev. H. S. Solly, M.A.	Bridport
Charles Crew, Esq.	Lewcombe, Melbury Osmond
Rev. Sir G. R. Fetherston, Bart.	Pydeltrenthide
H. E. Huntley, Esq.	Charlton Park, Blandford

CERNE, JUNE 28TH, 1888.

Mrs. Holford	Castle Hill
Dr. Goodridge, M.D.	Child Okeford

WIMBORNE, JULY 25TH, 1888.

H. Stilwell, Esq.	Leeson, Wareham
Rev. S. Vosper Thomas	Wimborne
Miss Dashwood	Hill House, Templecombe, Bath
P. Suttill, Esq.	Bridport

WEYMOUTH, AUGUST 16TH, 1888.

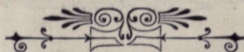
E. M. Blanchard, Esq.	Parkstone
Mrs. Everett	Dorchester
Colonel Mansel	Smedmore

DORCHESTER, DECEMBER 19TH, 1888.

Lieut.-Colonel Cotton	Fifield, Grosvenor Road, Weymouth
F. J. Beckford, Esq.	Parkstone
R. Pearce Edgecumbe, Esq.	Dorchester

Honorary Member :

Rev. Osmond Fisher, M.A.	Harlton Rectory, Cambridge
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New Members elected in Season 1889-90 and part of Season 1890-91.

DORCHESTER, JUNE 4TH, 1889.

Rev. Edward F. Linton	Bournemouth
J. K. Digby W. Digby, Esq.	Sherborne Castle
J. J. Foster, Esq.	London
Rev. C. Williams	Dorchester
Lewis Fyftche, Esq.	Freshwater (I. of W.)
G. P. Symes, Esq.	Dorchester

BRIDPORT, JULY 10TH AND 11TH, 1889.

Rev. W. P. Schuster	West Lulworth
Sir Frederick Weld, Bart.	Chideock Manor
Mrs. J. T. Stephens	Bridport
J. E. D. Philpott, Esq., M.D.	Lyme Regis
Rev. R. Green	Bridport
William Clibborn, Esq., M.D.	Bridport
Rev. J. Bain	Bridport
Rev. John Temple	Bothenhampton
Rev. J. L. Templer	Burton Bradstock
R. Chaffey Chaffey, Esq.	East Stoke-sub-Hambdon, Somerset
H. B. Batten, Esq.	Aldon, Yeovil

SMEDMORE, AUGUST 7TH, 1889.

Rev. J. T. Phipps	Portland
Dr. Alfred Russel Wallace	Parkstone
W. Armstrong Willis, Esq.	Wimborne

BADBURY, SEPTEMBER 11TH, 1889.

Walter Ralph Bankes, Esq.	Kingston Lacy
Rev. Canon Cazenove	Cranborne
H. Syndercombe Bower, Esq.	Fontmell Parva

Dr. J. Pleydell-Wilton	Weymouth
Rev. William M. Barnes	Monkton, Dorchester
Rev. R. W. H. Dobson	Swyre
Dr. W. C. Hine, M.D.	Parkstone
Dr. Allman, L.L.D., F.R.S., &c.	Parkstone

DORCHESTER, DECEMBER 18TH, 1889.

Frederick Fane, Esq.	Moyle's Court
Colonel Russell	Weymouth
John Meyrick Head, Esq.	Portland
Lord Digby	Minterne
Rev. Frederick A. H. Vinon	Bournemouth
Russell Patey, Esq.	Hampreston
Miss Patey	Hampreston
G. J. G. Gregory, Esq.	Dorchester
General Henning	Frome
Rev. Charlton Underhill	Came Rectory, Dorchester
Rev. J. Wynn Werninck	Walditch Vicarage, Bridport
Rev. O. M. Ridley	East Hill, Charminster

DORCHESTER, FEBRUARY 25TH, 1890.

Rev. John M. Pleydell	Bengeo Rectory, Herts
R. Fetherstonhaugh Frampton, Esq.	Moreton
Rev. F. T. Harrison	Blandford
John Goodridge, Esq.	Childe Okeford
James Henry Phillips, Esq.	Poole
Henry Symonds, Esq.	Dorchester
Dr. Baker	Dorchester
Rev. C. R. Hill, D.D.	West Fordington
J. F. Hodges, Esq.	Dorchester
Zillwood Milledge, Esq.	Weymouth

DORCHESTER, JUNE 4TH, 1890.

Rev. H. E. Bishop	Hampreston Rectory, Wimborne
W. R. Thomas, Esq., M.D., M.R.C.P.	Little Forest House, Bournemouth
James Cull, Esq.	6, Pembroke Gardens, Kensington, W.
Rev. Canon Thos. E. Usherwood	Rossmore, Parkstone
Rev. A. Morford	Poole

W. H. B. Fletcher, Esq.
Rev. D. Colquhoun Smart

Worthing, Sussex
Milbourne Vicarage, Blandford

PORTLAND, JULY 16TH, 1890.

Rev. Cecil Vincent Goddard
J. F. Pinney, Esq.
Colonel Tennant
Rev. John Climenson

Vicarage, Chideock, Bridport
Woodlands, Wareham
Stanton Court, Weymouth
Shiplake Vicarage, Henley-on-Thames

A. T. Manger, Esq.
George F. E. Lowe, Esq.
J. A. Hardcastle, Esq.
Arthur Lister, Esq.
Miss Guilelma Lister
Rev. Owen Luttrell Mansel
Rev. William Cattle
Rev. Percy Milne

Stock Hill, Gillingham
Gordon Villa, Dorchester
Beaminster
High Cliff, Lyme Regis
High Cliff, Lyme Regis
Church Knowle, Wareham
Charlton, Blandford
Rectory, Evershot

Honorary Member:

Mr. Wallis

Portland

SHERBORNE, AUGUST 28TH, 1890.

Rev. H. G. Watkins
Mrs. Watkins
Dr. J. P. Philpott, M.D.
Stuart Carr Glyn, Esq.
Rev. J. Hinxman

Lilliput Hill, Parkstone
Lilliput Hill, Parkstone
Parkstone
Woodlands, Wimborne
Charmouth



Dorset Natural History and Antiquarian Field Club.

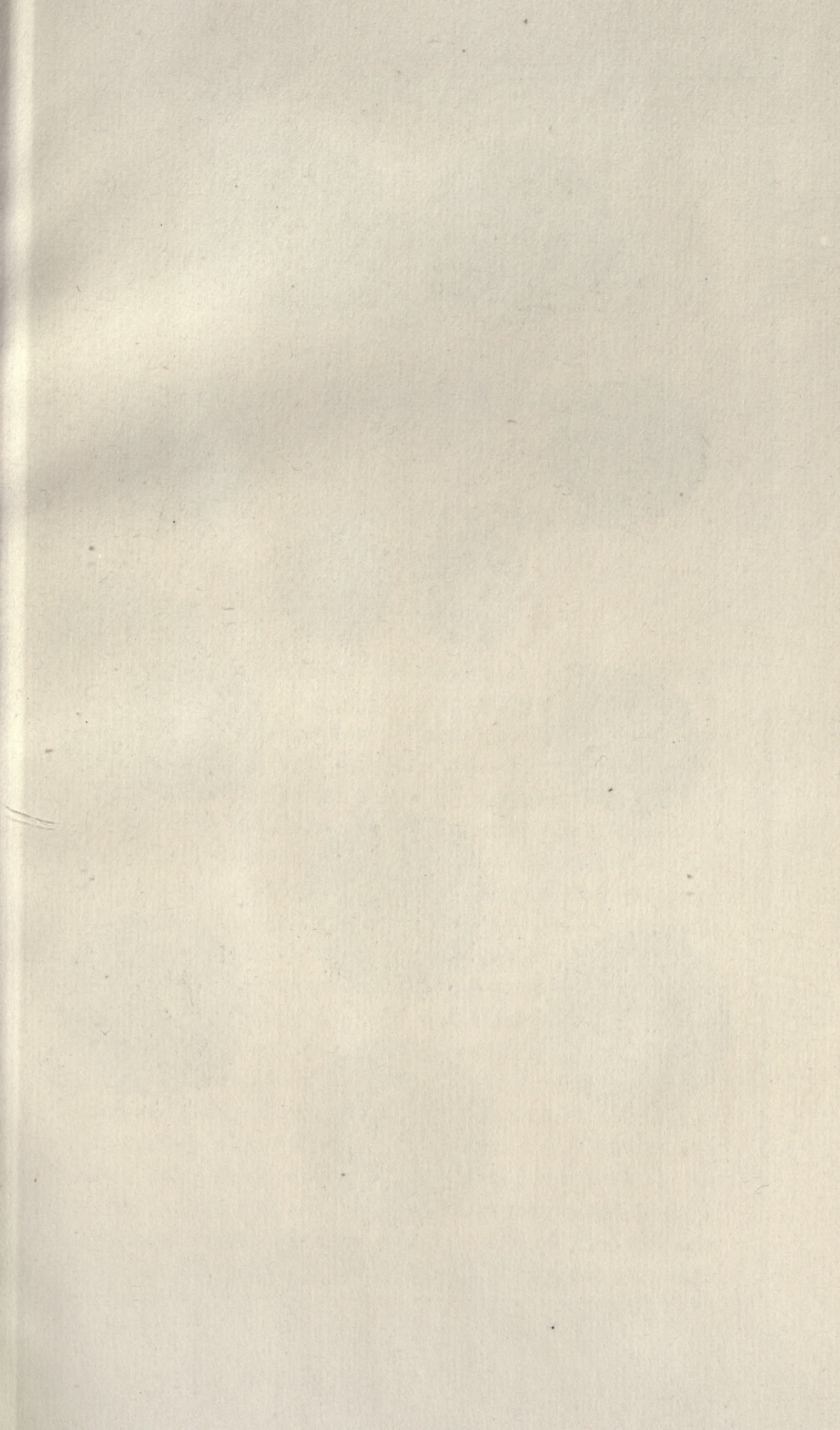
Dr.

1889-90.

Cr.

RECEIPTS.		PAYMENTS.	
	£ s. d.	1889.	£ s. d.
Balance from 1888-9 ...	15 0 9	Oct. 30—Mintern and Co., 10 Plates, 2 Woodcuts	34 9 9
Subscriptions (and Arrears) for 1889	132 3 0	" —E. Carter, 1 Plate	2 15 0
By Sale of "Spiders of Dorset"	6 0 0	" —Hannah, Carpeting for Museum Meetings	1 0 0
Ditto "Proceedings" of Club	16 7 0	" —Expenses at Badbury Meeting	1 0 0
By Balance from Meetings ...	22 7 0	Dec. 17—Sime and Co.:	
	1 9 9	Printing Vol. X., 300 Copies	86 13 0
		Authors' Copies	4 5 2
		Advertising and sending out	
		Notices to Members of	
		Meetings, &c.	9 10 0
		Mr. Voss, Donation for preparation of	100 8 2
		Museum for Meeting	0 5 0
		1890.	
		Feb. 15—Subscription, 1890, Footpaths Preserva-	
		tion Society	0 10 6
		May 31—Treasurer for Stamps and Carriage of	
		Vol. X. to Members	4 6 3
		Balance in hand	26 5 10
			£171 0 6

	£	s.	d.		£	s.	d.
Balance from 1889-90	26	5	10				
Arrears of Subscriptions due, to and including 1889 	47	10	0				
Subscriptions still due for 1890	99	0	0				
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	£172	15	10	Balance in favour of Club	172	15	10
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	£172	15	10		£172	15	10
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3A

ROMANO-BRITISH WELL.
WINTERBOURNE KINGSTON.



Winterborne Kingston Roman Well.

By J. C. MANSEL-PLEYDELL, Esq.,
F.G.S., F.L.S.



THE accidental circumstance of a heavy traction-engine passing over an arable field in the parish of Winterborne Kingston led to the discovery of the well which is the subject of this paper. During the process of extricating the wheel of the engine from the hole into which it had sunk it was found to be the mouth of a well, and, as a similar one had been found many years before in a neighbouring field and was proved to be Roman or Romano-British, I thought it would be a favourable opportunity to ascertain if the rainfall eighteen hundred years ago differed materially from that of the present day, also to get the approximate date when the well was filled up, which would presumably be between the time when the Romans finally left the island and the struggle of the helpless Britons with their Saxon invaders. The subsoil of the field in which the well was sunk is chalk, overlaid with materials derived from the Woolwich and Reading beds, about six feet in thickness; the head of the well was not built up with "blocks of greensand and chalk a foot square," which Hutchins describes to have been the case with the neighbouring well, but which might, however, have been

removed when the well was filled up. Its contents consisted of a dark-coloured mould, with a nearly uniform admixture of flints, also a mass of coarse broken pottery and a few sherds of Samian and Forest-ware, glass, iron nails, bronze fibulæ, bronze ornaments, pieces of Kimmeridge-shale, a mutilated quern, and a shallow vase of Purbeck marble, also a small, dark-coloured, oval-shaped blood-stone, three-eighths of an inch long and five-eighths broad ; on its polished face the figure of a fly was artistically and faithfully engraved, its wings and legs distended. This very interesting relic unfortunately fell out of the case in which I had deposited it and is irretrievably lost.

The diameter of the well's mouth was 3 feet 8 inches, which at a depth of 73 feet increased to 4 feet 4 inches, and where the highest water-mark was reached ; the workmen first arrived at water at a depth of 85 feet. Between these two points the well became much enlarged and irregular in shape, through the action of the water as it rose and fell at different periods. From the above it may be inferred that the rainfall upon Kingston Down and the neighbourhood has not materially altered, which is probable, when we consider its close proximity to the sea-coast and, nothing intervening, to deflect the moist Atlantic vapours as they passed over this Roman village.

The pottery found in the well was fragmentary, the larger portion having no ornamentation, some few are marked with horizontal and crossed lines. The rims usually have a simple outward hollow curve ; all the vessels are lathe-turned, many having eyelet holes for suspension. Vessels with similar eyelets are still in use here by the labourers for carrying them to the fields. Only a few pieces of Samian-ware of good quality, fragments of Forest-ware and thin glass, were brought up.

Among the other objects of interest in the well was a portion of a shallow mortar of Purbeck-marble, $6\frac{5}{8}$ inches in diameter and $1\frac{1}{2}$ inch deep, with projections at the side. There would have been four of these projections had the mortar been complete ; the portion recovered has two only. There were a few bronze ornaments,

including two fibulæ, a large pin, and other fragments. I was able to recover only six coins, whose dates extended over a wide range from A.D. 82 to A.D. 330, including the reigns of Domitian Nerva, Faustina wife of Antoninus Pius, Victorinus, and Constantine. Bones of domestic animals occurred at all depths—ox, sheep, pig, dog.

There were no land-shells; the only mollusc was the edible oyster, the valves of which were plentifully distributed, sure indications of the Roman period, as they are not met with in pre-Roman times. There were several pieces of unworked Kimmeridge-shale, but no ornaments or vessels of that material as are so often found in deposits of this period. General Pitt-Rivers found several at Woodcuts and Rotherley, including the curious circular pieces known as coal-money, doubtless of Roman manufacture, and probably the cast-off discs or cores of lathe-made rings. The presence of Kimmeridge-shale in a locality so far distant from its derivation-beds might be attributed to the superstitious value in which it was held by the British (not the Romans) on account of the inflammable properties of the material; whom, it is known, held fire in much veneration, and was an important factor in the direction of human affairs.

The site of the well is 13 miles from the sea. It is within a few hundred yards of the Via Iceniana, also of an extensive series of earthworks on Kingston Down, which have long attracted the notice of archaeologists from Stukeley's to the present time. It has been supposed by some to have been a station between Vindogladia and Dorchester, which had dropped out of Antonine's Itinerary of the Via Iceniana, and was the subject of an animated discussion when Dr. Smart's paper upon "Badbury Rings" was read last year. It is possible the archaeological section of our club may one of these days organise an examination of these prehistoric remains, which I believe will be found to occupy a considerable area and yield an harvest equally rich as Woodcuts, Rotherly, and Bokerly Dyke have yielded, under the indefatigable energy and liberality of General Pitt-Rivers, by whom the history of the latter especially

is in a fair way of being clearly read and its origin may be proved to be of a later date than has been hitherto supposed.

The occurrence of the coins of Victorinus and Constantine recalls some incidents in the history of Britain of that period. Victorinus, A.D. 265, was the third in succession who reigned in Gaul and Britain during the period of their dismemberment from the Empire during the reign of Gallienus, son of Valerian. During this disturbed state of affairs Carausius in 287 severed the island from the Roman Empire at a period when the Saxons and other Germans began to ravage the coasts of Britain and Gaul, after several ineffectual attempts to break his power, Diocletian and Maximian acknowledged him as their colleague in the Empire. On the election of Constantius, he addressed himself to the recovery of the Empire and obtained the murder of Carausius by his chief officer Allectus, A.D. 293, who enjoyed power for three years, when he was slain in battle, and in A.D. 304 Britain was again joined to the Roman Empire after an independence of ten years' duration. Constantine was chosen by the army in Britain to succeed his father as Emperor of the West A.D. 306; he died A.D. 340. In the reign of Honorius, A.D. 407, the British army revolted, and, after murdering Marcus, whom they had placed on the throne as Emperor of Britain and of the West, nominated a private soldier of the name of Constantine to the throne. In A.D. 407 the British army was finally separated from the body of the Roman Empire; the regular Roman forces were withdrawn, and the independence of Britain confirmed by Honorius. In the course of the Roman occupation, which lasted three and a-half centuries, most of the Celts had become Christians.

It is difficult to determine to which branch of the Celts the Durotriges who occupied this part of the country belonged. The Stour and the Parret appear to have been the dividing lines between the Gaels of Ireland, the Isle of Man and the Highlands of the North, and the Britons were represented in points of speech by the people of Wales and the Bretons; formerly one might have added

the Welch of Cambria, and till the last century, some of the Cornish people.

The presence of coins among the rough and fragmentary materials in the well suggests the probability that they were of no value when the well was filled up. The date of the latest was that of Constantine, who died A.D. 340, not more than 60 or 70 years previous to the abandonment of the island by the Romans, when Britain was left without a protecting force, and the inhabitants were left to their own resources. The Saxons on the south and east, and the Picts and Scots in the northern and western provinces, combined to attack the Romano-British, and, at the close of the fourth century, Kent and Sussex, and probably Dorsetshire, were in the hands of the Saxons. It was probably at this period when the Romano-Britons were scattered, and the villages abandoned, the Kingston wells were filled up. Shortly after the withdrawal of Roman troops several Anglo-Saxons settled on the shores of Britain from the Firth of Forth to Hampshire. They drove away, exterminated, or enslaved the Romano-Britons, and reintroduced a period of barbarism. Wherever the Anglo-Saxons came their first work was to stamp out with fire and sword every trace of Roman civilisation. Professor Rolleston has traced abundant evidence of the great aptness of our Teutonic ancestors in destroying and equal slowness in elaborating material civilisation.

Southern Britain was thoroughly Teutonized by the English invader. The nation which rose upon the ruins of Roman-Britain was in form and organisation English. The language spoken in the country then, was the same which had been spoken in Jutland. Only a few words of British origin relating to agriculture, household service, and smithcraft were introduced by the conquered Britons into the tongue of their masters; the dialect of Dorset still retains a few more of the British vocabulary.

About 4 feet from the well on its eastern side and $1\frac{1}{2}$ feet from the surface I found a circle, 6 feet in diameter, consisting of eight burnt tiles of different sizes, the largest 11 inches by $10\frac{1}{2}$ inches

and 1 7-10th inches thick, arranged edgeways at an interval of 10 inches from each other. In the centre of the circle was a small Sarsen stone, 6 inches in diameter, conical in shape, and somewhat like a cobbler's lap stone; close by lay an iron knife. I found no other object within the circle. A few feet on the north-east of the circle was an oblong grave-like looking pit, 6 feet long, 5 feet broad, and 4 feet deep, containing about two cart-loads of broken pottery, flints, and ashes, all of which had apparently been under the action of fire.

The purpose or use of this circle is difficult to determine; it had probably some connection with religion.





MEMOIR UPON A NEW ICHTHYOPTERYGIAN FROM THE KIMMERIDGE
CLAY OF GILLINGHAM, DORSET,

Opthalmosaurus Pleydelli.

By J. C. MANSEL-PLEYDELL, Esq.,
F.G.S., F.L.S.



UVIER says, in the "Ossements Fossiles," the Ichthyosaurus was first made known to the scientific world through the pages of the Philosophical Transactions in 1814, from a specimen found in the lias of Lyme Regis, comprising a well-preserved head and several other bones. Cuvier's memoir shows the relation of the shoulder with that of the crocodile ; of the nares, sclerotic bones of the eye, and the vertebræ with those of the fish, as well as the absence of a sternum. These latter peculiarities led Kœnig, who was then Keeper of the Mineralogical Department of the British Museum, to give to the family the generic name *Ichthyosaurus*. It presents a combination of forms which are found separately in various orders of vertebrates ; it has the teeth of the crocodile, the head of a lizard, the vertebræ of a fish, the paddle of a whale, and the palate is essentially similar to that of the existing Rhynchocephalian genus *Sphenodon*, of which the living *Hatteria* is the sole representative. The head partakes of the character of the crocodile in the form and arrangement of the teeth, and with the lizard in the position of the *nares*, which are set in the region of

the eye and not at the distal end of the snout. The head is very large and prolonged into a more or less elongated snout, the brain cavity is remarkably small, and the eye large. The orbit of *I. platyodon*, the largest known species, has been found to measure 14 inches in its long-diameter. The enormous size of the eye must have admitted a large amount of light, and have enlarged its powers of vision; by the muscular adjustment of the sclerotic plates by which objects far and near would be readily focussed and clearly depicted upon the retina to aid the animal in pursuit of its prey. The eye of turtles, lizards, and rapacious birds of the present day are also furnished with sclerotic plates. Birds of prey, which soar to great heights, can command by means of these plates a uniform and continuous change of focus in their descent upon their victims below. They aid equally nocturnal birds of prey by admitting a larger amount of light when the rays at eventide are few and feeble. As this family has no sacrum, the vertebral column consists of a precaudal and a caudal series only; the centra of the precaudals have a pair of tubercles for the articulation of the double-headed ribs, whilst in the latter the tubercles coalesce. In the cervical region they are placed near the neural-arch, on the lateral surface of the centrum and gradually descend, towards the inferior part, reaching the base where the precaudals terminate. The shoulder-girdle of the *Ichthyosaurus* is furnished with a clavicle and inter-clavicle, which in *Ichthyosaurus* proper is T shaped. It was upon these elements and the three-faceted humerus, which differs materially from the original type, Professor Seeley founded his new genus *Ophthalmosaurus*. The anterior and upper surfaces of the clavicles, which are massive, are united by a suture, and instead of the transverse wedge of the inter-clavicle lying beneath the clavicles, by which it is partly embraced, it is fitted into a deep groove which occupies about five inches of the median portion, and separates the two bones by about an inch; this again is a divergence from the Ichthyosaurian type, which has united clavicles. The clavicles of *Ophthalmosaurus* form a crescent-shaped bone, the horns having a backward direction. The concave or posterior surface is

furnished with a groove to receive the anterior end of the coracoid, which is more than usually expanded, and is united to its fellow by a cartilage; only the right one has the anterior notch, which is a characteristic of the coracoid bones of the Ichthyosaurus.

The scapula is curved throughout, the concave side being inward so as to overlap the ribs. The limbs of the Order *Ichthyopterygia* show, as might be expected, a remarkable deviation from the lacertine type to adapt it for pelagic life, they are specially formed for strength, combined with elasticity. The phalangeal bones, instead of being elongated as with *Pliosaurus* and *Plesiosaurus*, are polygonal and arranged in more than five closely-packed longitudinal rows, the whole covered with an integument forming a highly elastic organ of locomotion. The anterior border of the integument was furnished with a narrow band covered with minute horny scales, the band of the posterior border was broader, containing apparently parallel bands of muscles set obliquely to the axis of the paddle. In the *Lati-pinnate* group, which ranges from the lias to the chalk, these integumental borders only reached a short distance below the terminal digits; whereas in the *Longipinnate* group, which is not found above the lias, the borders were produced to a point a long distance below.

The humerus of the Order is a short massive bone, and usually larger than the femur; the distal ends of both are much broader than the proximal, which is twisted forward through an angle of 40°. The humerus and femur of Ichthyosaurus are furnished with two facets to receive the *ulna* and *radius*, which are close to each other; to these are articulated inferiorly three bones—the *ulnare*, *intermedium*, and *radiale*; the *intermedium* being the middle bone, and articulates with the *radius* and *ulna* at its junction. Below the *intermedium* is the *centrale*, and below again the remaining metacarpals and phalangeals. The humerus of *Ophthalmosaurus* was furnished with three facets, to which three bones of the forearm were severally attached. The homology of this third bone in the paddle of *Ophthalmosaurus* becomes a very interesting question. The peculiarity of three facets to the propodial bones (humerus and femur) occurs in the Kimmer-

idgean *Cimoliosaurus trochanterius*, Owen, *Plesiosaurus manseli*, Hulke, and the Portlandian *Cimoliosaurus portlandicus* (*Pliosaurus portlandicus*), Owen, *Baptanodon* (*Sauranodon*) from the Upper Jurassic of North America. In all these species the humerus articulates distally with three bones, corresponding with the *ulna*, *radius*, and *pisiform*, giving the limb a great width. In the Oxford Clay and Kimmeridge species these facets are very unequal in size, but nearly equal in *O. Cantabrigiensis* of the Cambridge Greensand.

The name *Ichthyosaurus* * was selected by Kœnig in consequence of the similarity of the vertebral column to that of the fish, each centrum being exceedingly concave, pliable, and adapted for pelagic life. *Opthalmosaurus* † was chosen by Professor Seeley to designate his new genus, from the sclerotic plates of the eye already referred to, and which are persistent without exception throughout the whole Order of Ichthyopterygia. Complete skeletons of small *Ichthyosaurs* have been found within the thoracic and abdominal cavity of larger individuals of the same species. These entombed specimens led Professor Seeley to think that some *Ichthyosaurs* were viviparous, especially as their heads were turned towards the tail of the enclosing animal, but this is not always the case, as Professor Merian described a specimen from the Upper Lias of Württemberg in which the included *Ichthyosaur* lay with its head towards that of the enveloping specimen. The *Ichthyosaurian* coprolite is an oval body, measuring usually from 2in. to 4in., and shows the spirally convoluted surface of the intestines. The jaws of the Order are powerful and capacious; some species were armed with no less than 180 teeth, not fixed in distinct sockets, but in a common alveolar groove. A fracture is usually found at about a fourth of its length from the extremity, which has led to the supposition that these reptiles were furnished with a caudal-fin like that of the cetacea, only instead of being vertical it was horizontal. After the close of the Liassic period there was a tendency on the part of some of the members of the reptilian family to differentiate, as in the shoulder-girdle of *Cimoliosaurus*; whose structural

* *ἰχθυος*, a fish; *σαυρος*, a lizard. † *ὀφθαλμὸς*, an eye; *σαυρος*, a lizard.

departure from the *Plesiosaurian* type has caused it to be assigned to a new genus.* Similarly the departure of *Ophthalmosaurus* from the *Ichthyosaurian* type in the clavicle and propodial form of the fore and hind-limbs induced Professor Seeley to remove it to a separate genus. This change from the type appears to have commenced after the Liassic period ; it has been found in the Oxford Clay, the Kimmeridge Clay, and the cretaceous beds.

Among a large mass of bones from the Kimmeridge clays of Gillingham, kindly presented to the County Museum by Mr. Freame, jun., I observed an *Ichthyopterygian* humerus with three facets at its distal end, two being the typical number. Feeling sure it was a humerus of the new genus separated by Professor Seeley from *Ichthyosaurus* in 1874 upon the evidence of a specimen from the Oxford Clay of the neighbourhood of Peterborough, in the collection of Mr. A. N. Leeds, of Eyebury, near that town, I forwarded it to my eminent friend Mr. R. Lydekker, together with a few other associated bones. The result of his examination will be found towards the end of this memoir. I was glad to find my opinion confirmed with the exception of a small humerus with two facets, which I wrongly supposed to be the femur of the same animal (the femur of an *Ichthyosaurus* is almost invariably much smaller than the humerus). I was under the impression that the hind-limb retained the typical number of two epipodial bones. Mr. Lydekker decides it to be the humerus of a true *Ichthyosaur*, which brings out the remarkable fact that the remains of two animals, an *Ichthyosaurus* and an *Ophthalmosaurus*, were rolled up together in the same clay-bed.

Associated with the rest of the bones were portions of a massive snout, the alveolar margins of which were unfortunately missing. Five teeth of *Ichthyosaurian* character were found lying displaced on the fragments of the snout ; they apparently had fallen from their alveolar groove without violence. This loose attachment of the teeth to the jaw might be a feature

* See Vol. X. "Proceedings of Dorset Natural History and Antiquarian Field Club," p. 171.

peculiar to the genus, and may account for the absence of teeth in the jaws of the fine series of Ophthalmosaurian remains in Mr. Leeds' collection. I feel little doubt that the teeth and snout belong to the three-faceted humerus.

The following is a description of the specimens kindly furnished me by Mr. R. Lydekker :—

"The Ichthyopterygian remains from the above-mentioned find in the Kimmeridge clay of Gillingham sent to me by Mr. Mansel-Pleydell comprise two propodial bones and three vertebral centra. One of the propodial bones is much larger than the other. The larger bone is undoubtedly a left humerus, which, in the presence of three distinct facets, is shown to belong to *Ophthalmosaurus* as distinct from *Ichthyosaurus*.

The smaller propodial (fig. 1), which is about three-quarters the dimensions of the larger one, appears, however, to be equally most probable that they belong to the same animal.



Fig 1. Reversed view of the proximal, dorsal, and distal aspects of the right humerus of *Ichthyosaurus* sp. from the Kimmeridge clay of Gillingham, Dorsetshire, $\frac{1}{2}$ nat. size, *a* trochanter ridge, *r* radial facet, *u* ulnar ditto.

clearly the humerus of the right side, and as having only two distal facets should apparently be referred to *Ichthyosaurus*.

It appears, therefore, to be the case, strange as it may seem, the Gillingham remains really comprise the remains of two distinct individuals, and accordingly there arises a doubt as to which of the two forms the vertebræ belong. Since however these vertebræ present the same proportionate relation to the large humerus as obtains between the corresponding bones of *Ophthalmosaurus icenicus*, I take it as

I have had recently an opportunity of comparing the Gillingham specimen with a large series of the remains of the typical *O. icenicus*,

preserved in the collection of Mr. A. N. Leeds. The accompanying woodcut (fig. 2) shows part of a right pectoral limb of the latter species lately presented by Mr. Leeds to the British Museum. It will be seen from the figure that the humerus is a comparatively elongated bone with the postaxial distal-facet relatively small, and narrowing to a sharp point, and since a number of examples in the collection of Mr. Leeds exhibit precisely the same feature, the small size and pointed extremity of the postaxial part of the humerus may be regarded as characteristic.

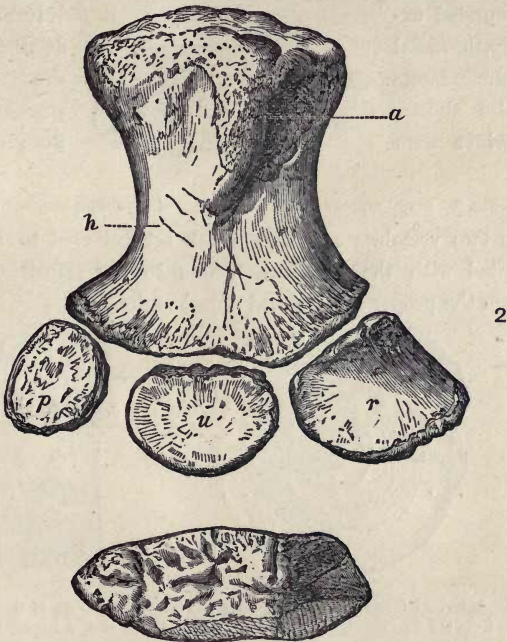
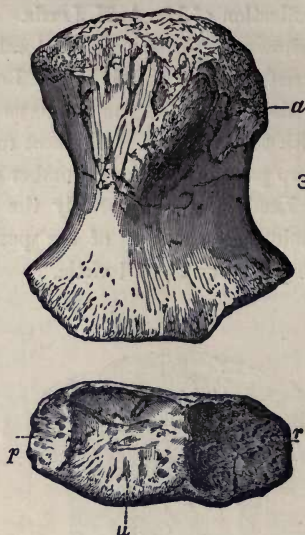


Fig 2. Dorsal aspect of part of the right pectoral limb of *Ophthalmosaurus icenicus*, with a view of the distal extremity of the humerus from the Oxford clay of Peterborough, $\frac{1}{2}$ nat. size, *h* humerus, *a* trochanter ridge of ditto, *r* radius, *u* ulnar, *p* pisiform.

It will be seen that the whole bone is relatively shorter than the humerus of the type specimen, while the post-axial facet in order to receive the pisiform is larger and has a broad and rounded extremity, the radial and ulnar facets are also shorter and wider than



in the type species, the radial terminating in a blunt and rounded, instead of in a pointed, extremity. These features may therefore be assumed to be characteristic of the Kimmeridgian, as distinct from the Oxfordian representative of the genus.

Fig. 3. Dorsal aspect and distal extremity of the Gillingham humerus.

The two vertebræ sent me, which are believed to have been associated with the humerus, belong to the transitional region between the proper cervical and dorsal regions.

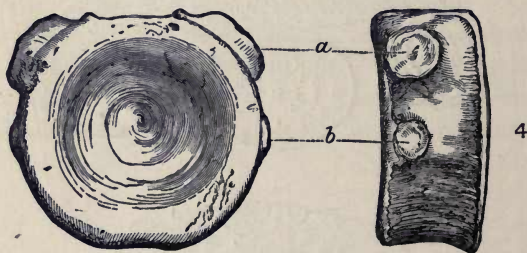


Fig 4. Anterior left lateral aspect of a very late cervical vertebra of *Ophthalmosaurus pleydelli* from the Kimmeridge clay of Gillingham, $\frac{1}{2}$ nat. size, *a* upper, *b* lower costal tubercle.

The typical specimen has a length of 1.15, a height of 2.25, and a width of 2.8 inches across the posterior face. The two terminal faces are distinctly cupped, the cupping of the anterior face being

most marked at the centre. The ventral aspect of the centrum has a distinct longitudinal groove, which is still more distinct in the unfigured and somewhat imperfect specimen. None of the numerous series of vertebræ of *O. icenicus* in the collection of Mr. Leeds exhibit a similar ventral channel. It appears that the Gillingham *Ophthalmosaurus* is specifically distinct from *O. icenicus*, and it is equally clear that it is not identical with *Ichthyosaurus trigonus* or *I. ovalis* of the Kimmeridge Clay, in which the vertebræ are much larger and relatively longer. Whether, however, it is really distinct from the form described by Phillips from the Oxford Clay, upon the evidence of vertebræ, which have never been figured, as *I. dilatatus*, is, however, not so clear. If, however, the specimens which have provisionally referred to that species on page 30 of the Catalogue of *Fossil Reptilia und Amphibia* of the British Museum are rightly determined, and that large teeth are always wanting (as in Mr. Leeds' example) from *Ophthalmosaurus*, it would then appear that the Gillingham form is not identical with *I. dilatatus*. It is true, indeed, the large imperfect teeth which, from their mode of implantation in the jaw, and evidently Ichthyopterygian, have been found at Gillingham with these specimens, but these may also belong to the owner of the smaller humerus. Under these circumstances, and bearing in mind that *I. dilatatus* is a very imperfectly defined form, which on that account is perhaps not entitled to rank as a well established species, I propose to provisionally apply a distinct name to the Gillingham Ichthyopterygian, which may be known as *Ophthalmosaurus pleydelli*.





Badbury Rings.

By Dr. WAKE SMART, M.R.C.P., &c.



ADBURY Rings, though not standing on ground remarkable for its elevation, rises above most of the other hills near it, with a gradual ascent of about two miles from the Stour at Shapwick. Its altitude may not be above 400 feet; but this is sufficient to give an extensive and beautiful prospect on all sides, including the Isle of Wight and the Purbeck range of hills, with the Bulbarrow range and the Wiltshire hills and downs. From Old Sarum, which, in some measure, resembles Badbury, the Romans carried a military road, straight, as the natural obstacles would permit, from thence to Dorchester; in its course it passed very near the West side of the ramparts of Badbury, thence onward across the Stour in a direct line to its point at Dorchester. It is not necessary to say more than that the popular name it bears is Ackling Dyke. On the East side of the ramparts lies a second Roman road, and the position of Badbury is noteworthy, standing in the interspace of the intersection of these two roads; the Via Iceniana, or Ackling Dyke, coming from Sorbiodunum (N.) to Durnovaria (S.W.), and the other road, which comes from Morionio (Hamworthy) (Note 1), on Poole Bay

(S.W.), crosses the Stour and the meadows two miles above Wimborne, then through Kingston Lacy Park to the E. side of Badbury, and thence to the N.W. border of our county at Ashmore; its ultimate destination being, in all probability, the N. of Somerset and the Bristol Channel. It is not necessary to follow these lines throughout (Note 1).

Badbury Camp is an antiquarian puzzle. It is manifestly a work of triple circumvallation, consisting of deep trenches and ramparts. Its area is rather more than 18 acres. The entrenchments consist of three concentric ramparts flanked by corresponding ditches. . . . The entrances are on the E. and W., the former a simple approach through the several ramparts; the entrance from the W. through the middle agger is protected by additional defences (Note 2). The circumference of the outer rampart is 1,738 yards, nearly one mile (Note 3).

The question naturally arises, to what period and to what people are we to attribute its construction? Is it the work of one people and of one period only? Or, is it the work of two or three separate races at three distinct periods of our national history? These are questions not readily answered in the present state of our knowledge. It cannot be done satisfactorily without a systematic exploration of its three areas of defensive work, and such as this has never yet been attempted.

There cannot, I think, be a mistake made in assigning the central area to the Kelts. Its circumvallation with a single rampart and ditch carry us back to Cæsar's description of the British Oppidum, a place of refuge and protection of the surrounding tribes. The middle area with its rampart and ditch may be either an addition to, or extension of, the original work at a later date; or, it may be the work of the Roman alone after his

NOTE 1.—*Ancient Dorset*, p. 34.

NOTE 2.—Warne's *Ancient Dorset*, p. 34. Hutchins' *Hist. Dorset*, vol. ii., edit. 1.

NOTE 3.—Britton and Brayley, 1805. "Topographical and Historical Description of the County of Dorset."

subjugation of the Kelts. The third or exterior area of defence may be the work of the Saxons. We have no facts at hand to supply any definite ground of opinion on these points; they must be left to individual consideration.

But we may, I think, gather some indications from the nomenclature which Badbury has borne. Its original Keltic name seems to have been simply the syllable *Bad* or *A-bad* (the abode, habitation, city, town, &c.); a pure Gaelic word, I believe, derived from the connate Sanscrit, *a-bad*, as in Hyder-a-bad, Alla-habad, Aurengabad, &c. The elision of the letter A gives at once the Gaelic etymon *bad* (abode, &c.), applied to this ancient *abode*, *fortress*, *Oppidum*. The Roman seems to have preferred a name of his own making, made up of words which still carry us back to pre-Roman times; the name *Vindogladia* seems to be compounded of the Keltic words *Gwyn* (bright, clear), *Gledd* (green sward, grass land, &c., glade (Note 1). This name is found in Antonine's Itinerary XV., applied to some station on the Roman Way between Sorbiodunum and Durnovaria. In vol. iv. of our Field Club, p. 123, I have contributed a paper on *Iter Antonini XV.*, wherein I have ventured to put forth certain reasons that lead me to think the name *Vindogladia* may be truly assigned to Badbury. The suggestion remains, of course, *sub judice* (Note 2).

The Saxon, as usual, made a name according to the genius of his language. He took the Gaelic vocable *Bad* for his prefix, finishing his invention with the suffix *berg* or *berig* (hill, town, &c.), and has thus given us BAD-BURY and its variants, *Ban-bury*, *Baddan-berig*.

Of the successive occupants of Badbury, the notices that have reached us are few and scanty, but are still important.

1. The Kelts have left but few evidences, so far as we know, of their connexion with the work; their presence is to be found

NOTE 1.—Rev. W. Barnes, B.D., in vol. iv. of Field Club, p. 73, in a paper "On Iter XVI. of Antoninus," which is *Ric. de Cicestr.* version of Iter XV. Antonini.

NOTE 2.—"Some Observations on Iter XV. of the Itinerary of Antoninus: On Vindogladia; and a Plea for Badbury." *Vide* pp. 130—133.

rather in casual discoveries outside than in the interior of the work. A tribe, or tribes, of this people undoubtedly inhabited the surrounding country. We are familiar with their Tumuli, those silent witnesses of their mode of disposal of their dead. The account of the excavation of a very remarkable Tumulus may be seen in Mr. Warne's *Celtic Tumuli of Dorset*, No. 85, p. 53, taken from the original report of the Rev. J. H. Austen, in the *Journal of the Archaeol. Instit.*, vol. 3, p. 348. This Tumulus stood about one mile S.W. of Badbury. There are other tumuli, trackways, and dykes—evidences of Keltic occupation. In Mr. Henry Durden's fine museum there is a bronze leaf-shaped sword from this neighbourhood, and in the same gentleman's coin cabinet a gold coin of CUNOBELIN, found in that locality.

2. The Roman occupation is more noteworthy for affording evidence of their presence. We are indebted to Aubrey, the old Wiltshire antiquary, for some facts he has recorded (Note 1). He says that in 1677 were found in *Badbury Warren* some Roman coins—a coin of Diocletian. Mr. Ettrick had a Roman sword found in the camp about 1665. "They (the finders) used it for a cheese-toster!" and Mr. Ettrick, of the Inner Temple, told him another sword was found in the camp about 1688. Coins have been found at Pamphill (Note 2), also in the Park near Abbotstreet (Mr. Lumsden inf.), several small vases of Roman ware found in digging out a ferret in the camp (ib.) On Hemsworth Farm, in 1831, were discovered the foundations of several rooms, in one of which I saw a beautiful representation of a dolphin surrounded with a fine ornamental border, all in Mosaic work. I obtained about that time from a labourer a bronze-handled large knife or sword, the handle presenting a dragon's head and neck in

NOTE 1.—See Warne's *Ancient Dorset*, Note p. 35, and Aubrey's MSS. in the Bodleian; also *Monumenta Historica Britannica*.

NOTE 2.—My informant was Mr. Lumsden, the intelligent Scotch gardener at Kingston Lacy, in 1847, who accompanied myself and friend in our search for traces of the Hamworthy Roman road from the Stour to Badbury, with decided success. (See *Ancient Dorset*, p. 180, Note p. 181—"The Vicinal Way from Badbury to Moriconium on Poole Bay.")

fine relief. It was said to have been found in hedging near Badbury. This interesting relic I presented to the late Mr. Sturt, of Crichel.

But all these treasures would be eclipsed if the golden coffin which the villagers believe is buried somewhere between Badbury and Shapwick were to be discovered! What a prize for the Dorset Museum!

3. The Saxon occupation need not detain us long, being well known as a historical incident, recorded in the Anglo-Saxon Chronicle, sub-Anno 901. This was probably of short duration, but it has left a memorial which will endure so long as the name of BADBURY lasts and the great earthwork itself continues to be one of the landmarks of our dear old county.

ADDENDA.

Revising what I have written, it occurs me that I have not been sufficiently explicit in my allusions to the Roman Way that lies between Poole Bay and the Via Iceniana, near Badbury. From Hamworthy, its point of departure, it has been known, probably from time immemorial, running across Lytchett Heath to Cogdean as a raised road or causeway, used in parts as a parish road; but from Cogdean, and across the meadows and river Stour to its northern terminus, its course seems to have been unknown, or at all events undescribed. Taylor's Map of Dorset (1765) and other old Maps show a line of Roman road that left the Ackling Dyke at or near More Crichel, on the S.E. of Mr. Sturt's Park, and ran straight by Pamphill to the Stour, and onwards to Cogdean near Merley. I venture to assert that, strangely enough, no one has ever made this line a matter of practical demonstration. It therefore seemed desirable that some enquiry should be made, and with this object in view I took upon myself the responsibility of making that enquiry in the year 1847; but the result first appeared in Mr. Warne's *Ancient Dorset* (p. 180) "*On the Vicinal Way from Badbury to Moriconium* on Poole Bay,*" 1872).

NOTE.—* Baxter.

I cannot, I think, do better now than give a literal transcript of my notes written at the time when the enquiry was engaging my attention. They are as follow, viz :—

“THE BRANCH ROAD FROM THE VIA ICENIANA TO
POOLE HARBOUR.

“*December 14th, 1847.*—The first trace of this Roman road is seen at Corfe Mullen Gravel-pit, about $1\frac{1}{2}$ miles S.W. of Wimborne, where there is a vertical section of it, and its foundation marked by a dark list in the gravel, being the original surface of the ground, is clearly seen ; above which the soil is raised some two or three feet. The raised way is not very conspicuous over this piece of heathy land, but it may be clearly traced to a point on the Merley Lane, about 400 or 500 yards E. of ‘Cogdean Elms;’ on the other side of the lane it appears again, and soon upon the heath land shews a well-formed raised dorsum, and is continued in almost a straight line from Merley Lane across the Heath to Upton. A waggon track follows its course, running sometimes parallel with it, at others on its top. During this course its direction is about N. and S., and it forms the boundary between Canford and Corfe Mullen parishes, extending between three and four miles to Upton. The fact of its having been a Roman road is perfectly well known to the peasantry in its neighbourhood. I met with a man named Allen, who lives on the Heath, who informed me that the Roman road continues straight through Upton Park, and at the back of the house makes a bend to the West, obviously to avoid the creek which communicates with Poole Bay at high water. Having rounded this point it makes for Hamworthy Church in a line with its former course ; and my informant stated that he dug through it about 20 yards W. of the Church. It probably terminates about that spot, where he also dug up several old coins, and his father some years ago dug up some pavement formed of pieces of *different coloured brick* in a field not far from the Church. From Corfe Gravel-pit to Hamworthy Church may be about five miles.

“When labourers were digging gravel in this pit four or five years ago for the new turnpike between Wimborne and Dorchester they found several urns, containing burned bones. One of these urns is in the possession of Mr. Lambert, of Knowle Cottage, Corfe.”

“THE BRANCH ROMAN ROAD.

“*December 24th, 1847.*—The road may be clearly made out to the Corfe Gravel-pit. I was unable to trace it from this point to the meadows across the enclosures, about half-a-mile; but it probably entered them about Lake Mill, about one mile W. from the town of Wimborne. From conversation I had with several old labourers, independently of each other, I ascertained that its course may be traced across the meadows in the direction of *Eye-ford*, or *Eye-bridge*, which is under Pamphill. They all averred this fact—that they had mowed over a low bank running in that direction, which is known as ‘The Roman road.’ If it ascended Pamphill from this point, and continued on in a straight course, it would pass near Hill Butts and to the W. of High Hall and Barnsley, following, in fact, the route which is marked in some old maps, to a point in More Crichel, where it was supposed to join the *Via Iceniana*. I examined the enclosures and lands as far as High Hall, but was unable to trace any part of it. I fancied that Chilbridge Drove might have been formed on it; but there is no trace of its continuation on the Down [*Bradford*] or enclosures at the end of the Drove.

“I was more successful in my search in another direction, having met with Mr. Lumsden, Mr. Bankes’ gardener, who, having a taste for antiquities, joined in the investigation, and immediately took me to a spot in the plantation S. of the house and W. of Abbotstreet, where about 50 yards of Roman road, well defined, exist, and point to Badbury Rings. It may be traced for a short space in Mr. Bankes’ Park; but after this all traces have been effaced by cultivation, this part of the Park having been arable land within the memory of man. But its line would pass about 50 yards E. of the *Old Obelisk* across the Park to Lodge, a farm

just outside the Park, which stands upon its line ; from this point it may be traced across three fields to the corner of Kingwood, and is then seen distinctly on the Down close by the E. side of Badbury Rings, and then in the field N. of the Rings, near the bottom of which it forms a distinct junction with the *Via Icen*. The latter turns off to the W. of The Rings, where, in passing, it touches upon the edge of the exterior fosse, and is continued onwards into the Shapwick enclosures. The branch from the junction is continued in a more direct line towards the Rings than the main road. The *Via* are here formed of round pebbles, which are found at hand. (*Here I have a rough sketch of the camp with the two lines from the junction.*)

There is no doubt, therefore, of a branch road, which passed off from the main line about quarter of a mile N. of Badbury, and pursued a S. or S.E. direction straight through Kingston Lacy Park. It only remains to be proved whether this line is the continuation of that which we had traced across the Wimborne meadows, or whether it is altogether a distinct branch. I am inclined to think that it is one and the same, and may possibly be traced, although I failed to discover it somewhere in the Abbotstreet or Cowgrove fields, to the spot in Mr. Bankes' Plantation, which is about 100 yards W. of the lane leading to Cowgrove from Abbotstreet. If this be the case the road must have made a considerable angle after crossing the meadows from Lake. There is no ford over the river W. of Eyeford until we come to Barford, which may account for the angularity of the line.

"*September, 1848.*—I have had an opportunity of tracing the line of the *Via* across the meadows. It runs straight from Lake to a point on the river about quarter of a mile above or W. of Eyebidge and Eyeford, opposite to Mr. Charlton's dairyhouse, which appears to stand on its line. It thus leaves Pamphill and Abbotstreet to the N. and points in the direction of Mr. Bankes' Plantation to the N.E., where it is again visible ; but I have not traced it from the river thus far, across the enclosed and arable land [*small fields*], where its course is most probably obliterated,

the distance being about a mile. On the Lake side it is very evident, running diagonally across Mr. Bankes' meadow to the back stream, and near to where Lake Mill formerly stood; but I could not make it out any further, nor where the present turnpike road crosses its line. From this point to the Gravel-pit is about quarter of a mile, and the modern road might have been formed upon it, or its course through the field is obliterated."

These conclude the notes of my personal observation, and I desire to add that in these excursions I was accompanied by my old friend the late Mr. Hawes, of Wimborne, who took the greatest interest in the enquiry.

It will not be irrelevant to adduce a statement which I find in *Ancient Wilts*, vol. ii., p. 34, 1812, from such an experienced practical archæologist as Sir Richard Colt Hoare, Bart. :—

"VIA ICENIANA.

"It comes out of the Park (Mr. Sturt's) into a wide green trackway to the left of a row of cottages (near the school house). I wish my readers to notice this particular spot, *from which another Roman road diverges to Poole.*" [The italics are mine.]

* Note by Sir R. C. H.

"BADBURY, P. 35, IB.

"The first time I visited this ground I was forcibly struck with the appearance of *two raised causeways ascending the hill in different directions*, the one mounting the high ground in a direct

* "I was twice induced to explore this line of Roman road, which, according to Mr. Taylor's Map of Dorsetshire, branched off from this spot, but am sorry to say that our researches, though in parts successful, were not attended with that satisfaction we could have wished. There is, indeed, but one part of it which is very evident, and that is near Cogdean, and not far from the mansion house at Merley. It is afterwards traversed by the road leading from Poole, between miles five and six, and its line has been adopted for the course of the modern road across the dreary Heath, and newly enclosed lands leading over Lytchett Common towards Poole Harbour. Its probable destination was Hamworthy, or some spot in its vicinity, as the straight line is continued to the toll gate towards Ham Heath."

line from the Roman road I had traced from Sorbiodunum, and the other deviating, as I said before, to the right. The one towards the S.E. is much worn down by the plough, and, except when assisted by the effects of light and shade, might possibly be overlooked by those who were ignorant of its existence. It points directly to the summit of the hill, and to the East corner of the camp, whose outworks have covered the causeway. *If this ever was the work of the Romans*, we are at a loss to know whither it led, as no signs of it are visible on the other side of the camp; but the most probable place of its destination was Wareham."

In the year 1806 Archdeacon Coxe, of Salisbury, with his friend Mr. H. Hatcher, walked over the Roman road between Old Sarum and Dorchester. In a letter to the Rev. W. Leman in 1844 Mr. Hatcher states that "At or near Badbury it threw off a Vicinal Way, which led to the upper part of Poole Harbour;" *no further particulars recorded*. (A note by Rev. W. Leman in Rev. Mr. Greenley's copy of *Reynold's Commentary on Itin. Antonini*).

It will now be understood that the Vicinal Way from Hamworthy on Poole Bay, which Mr. Warne believed to be MORIONIO of the Ravennate, has acquired a much higher importance from its undoubted connexion with the other branch way, the discovery of which is, in a great measure, due to our respected President, and ably described by him in vol. ix. of our "Proceedings." It is manifest that this branch, which is traced from the border of Dorset at Ashmore to a junction with the Via Icen., near Badbury, there unites with the Vicinal Way we have just described, so as to constitute one continuous line of Roman road to the N. shore of Poole Bay. This is its S.W. terminus; its Northern has not yet been found; but we venture to hope that our antiquarian friends on the Wilts side of the border will kindly direct their observation so as to ascertain if any traces of our branch can be detected beyond what are already known of it as "coming up Donhead Hollow from the Vale of Wardour" (Rev. J. H. Austen). We are forcibly impressed with the idea of its continuation to Bath or

Wells, and that it may be found to make a junction with the line through Great Ridge, and by Monkton Deveril, the Roman road, in fact, from Old Sarum to Uphill, on the Bristol Channel, the VIA AD AXIUM; or that it more probably followed an independent route through these parts of Wilts and Somerset to Bath, or elsewhere. We must leave this to the decision of experienced archæologists.

T. W. W. S.





Notes on some Habits of the Squirrel.

By the Rev. O. PICKARD-CAMBRIDGE,
M.A., F.R.S., &c.



HAVE no intention of attempting here a monograph, or a life-history of the squirrel; what I wish to do is merely to state some observations I have made, chiefly in reference to its laying up of food for winter use. My observations have extended over a good many years, and seem to me to establish a point not noticed, so far as I know, in the descriptions and accounts given in natural history works on the squirrel. With regard, however, to this, I must not be positive, for although I have searched several accounts, such as those in Bell's British Quadrupeds and Lord Clermont's Quadrupeds of Europe, I have not yet had time to collate thoroughly the current Natural History Journals, in which, of course, there may be notices of the point in discussion.

It is, however, my intention to make as speedy and exhaustive a search as I am able in such Natural History Journals as are open to me. I think the latest printed utterance on this subject may be taken as contained in an article in the *Field* not very long since entitled "Winter Stores of Squirrels and Hamsters." This article was very kindly brought to my notice by Mr. Eustace Bankes,

to whom I had mentioned my intention of jotting down the present notes. In the *Field* article it is said "Early in the Autumn squirrels begin accumulating food, which is stored in holes in trees in the neighbourhood of the nest." With this statement the Natural History Text Books I have searched are in exact agreement. No other method of laying up food for winter use is either expressed or implied; though their feeding in winter upon the seeds of the pine and fir cones is mentioned. I have never myself seen squirrels in the act of conveying food—nuts and acorns—to stores in holes of trees, nor have I ever come across such stores, though I do not for a moment question the exercise of these habits. But I have observed them for many past years busily engaged in picking up acorns and burying them singly over considerable spaces of ground in the immediate neighbourhood of the supply. There stands on my lawn, within 25 yards of my windows, a large Turkey oak, on which there are in most years more or fewer acorns, in some seasons very large crops. As soon as the acorns begin to drop (about the beginning of October) several squirrels are at their daily work, beginning early in the morning and continuing at intervals all day. The space immediately under the tree is searched carefully, and, even though the acorns may be lying thickly on the ground, yet it might appear to the observer as though there were some difficulty in finding them, for, undoubtedly, there is a good deal of evident discrimination and discretion exercised before one is taken in the mouth and conveyed rapidly to a short distance from the tree. As soon as the burying ground is reached a little hopping about and sniffing among the grass reveals the proper spot, where a small hole is hastily scratched with the fore paws, the acorn is thrust in with one or two pokes or dabs with the mouth, and still more hastily covered with earth by a scratch or two. The squirrel then returns equally expeditiously to the source of supply, and the operation is repeated for an hour or more at a time. What length of time may be the longest for a spell of work I cannot say, but certainly after a busy bout the animals disappear for a time, though only to return again at intervals

throughout the day ; and so the work goes on, more or less actively, as long as any acorns remain.

The squirrels are not the only acorn-hunters under the Turkey oak, for the harvest is shared with pheasants, rooks, wood pigeons of two species, and jays, representatives of all of which I have often watched busily and amicably at work at the same time.

I may here note a point which seems to be curious and worth mentioning—that is, that I have never seen the squirrels interring acorns *beneath the tree*—i.e., not within the distance of the spread of its boughs. The acorns, as far as my observations go, are always carried beyond the spread of the tree, and often for a considerable distance, as far, in fact, as 30 yards, though the bulk will be buried within that distance. This seems to me to be probably the result of that kind of instinct acquired by hereditary habit. An animal engaged along with others in search of objects of food equally desirable to all would naturally, on securing one, make off with it as fast as possible. If it were for immediate consumption it would be consumed as soon as a safe distance is reached. This may be observed any day by those who are in the habit of feeding animals together. As soon as one gets hold of a choice morsel it is made off with in order to be enjoyed in safety. In the case of a squirrel this instinctive flight with the acorn stops as soon as a little distance is reached, when, as the acorn is not wanted for immediate use, it is secreted by burial in obedience to another instinct. A curious collateral benefit is, however, derived by the squirrels from the habit of carrying the acorns to a distance ; that is the preservation of the buried stores from the search persistently carried on during autumn and early winter (and, indeed, often much later on) by the pheasants, rooks, pigeons, and jays. These would find out every acorn if buried just beneath the surface under the trees, where they are naturally looked for ; whereas there is no inducement to such depredators to search for the acorns away from the trees on which they grow. Thus the operation of the instinct of *flight with food* not only serves the squirrel directly against present competitors, but also serves it

indirectly by preserving the acorns from future depredation. I have, indeed, once or twice seen a pheasant stop in crossing the lawn during winter and discover an acorn, but there is no systematic search made for them over the open ground such as is carried on among the dead leaves and moss beneath the tree.

I am sorry to say that my squirrels do not always reap the ultimate benefit of their labours. As soon as the shooting season is over the destruction of squirrels as "vermin" by gamekeepers generally begins, and, although one or two usually manage to escape, and gradually, during winter and early spring, disinter the acorns from their place of sepulture, yet I fear that sometimes none survive, inasmuch as in some seasons I seldom see one after February. One year in particular, when none lived to "tell the tale" (or rather to find the acorns), a curious result happened. For about three weeks or a month at Midsummer in that year, owing to press of work in the garden, the lawn had been left unmown, and among the long grass there had sprung up a fine crop of young Turkish oaks, pretty regularly and thickly distributed over the whole lawn.

It is very interesting to observe the diligent and systematic way in which the buried acorns are hunted out. This is, apparently, entirely by scent. The squirrel hops about, putting its nose to the ground at every step; and when an acorn is found a few quick scratches with the fore paws disinter it, and it is carried off to a little distance before eaten. I do not remember ever to have seen a squirrel eat an acorn on the spot. This seems to be again an exercise of the instinctive habit of running away with its food.

I have alluded to the destruction of squirrels by gamekeepers as "vermin." They are accused of sucking the eggs of game, whether rightly or not, I have my doubts; but this I feel sure of, that they eat the eggs of starlings and jackdaws. Many of these birds nest in the holes of old ash and elm trees on and near the lawn; and any squirrel appearing there after nesting has begun is mobbed and has to beat a quick retreat. Once I thought one

would have been killed by a lot of angry jackdaws, but he managed to get into a clump of laurel bushes, and so escaped.

It is a pity that so pretty and interesting an animal should have any bad habits. Whatever may be the truth of the gamekeepers' indictment, squirrels are certainly most hurtful in a fir plantation. Not content with eating the seeds out of the cones, they feed on the young shoots, and gnaw the bark off even the trunks of good sized trees, sometimes all round, or nearly so. This causes not only profuse bleeding of the tree, but the wind soon breaks off the crippled portion and the tree is ruined, though, if young, another leader will be formed from a lateral branch in time.

Squirrels are also often very destructive to strawberries. Some few years ago, for several seasons, I had a large part of my crop destroyed by them. The largest and ripest were picked off, a piece eaten out, and the rest left between the rows of plants. It required the greatest care and trouble to catch the depredators in the act. I only did so once or twice. The beds were all surrounded with a low galvanised wire netting and covered with fine meshed string nets. For some time I was uncertain about the identity of the thieves, as I only found the remains of the strawberries and numerous holes in the string netting. At first I suspected rats; by careful concealment and watching, however, I did at length one day see my friend the squirrel seated on the railing to which the wire netting was fastened and gnawing a hole in the string net, through which he dived down in a moment among the strawberries. Before I could get to the opposite end of the bed he had heard me coming, and had as speedily gnawed another hole and let himself out. My belief is that these little thieves always gnawed a fresh hole to go in at and another to come out through on every visit to the beds. When disturbed from the strawberry beds they usually concealed themselves near the top of some leafy apple tree not far off. After much close search I discovered their place of hiding, and in the course of half-an-hour one morning five had paid the penalty of their lives, and the remainder of my strawberries for the year had peace.

It is remarkable that out of 22 years during which I have grown strawberries in this garden I have only been molested in those two or three seasons. Although squirrels have been about equally abundant during all those years, I have never known them in my garden touch any other kind of fruit, though I have heard that they will do so. I was just going to say that, excepting to protect my strawberries, squirrels have never been molested on my premises; but I call to mind a winter's day a few years ago on which one of my sons, for lack of other game, shot several squirrels, much to my annoyance. However, to make the best of a bad job, I proposed to have them in a pie, and to my great surprise my cook made no objection, and in due time the pie was made; and, oddly enough, our excellent secretary, Mr. Stuart, paid me that day one of his welcome, but few and far between visits, and remained to luncheon. The pie duly appeared and gave forth a very appetising odour. We all tried it and agreed that it was excellent, very far superior (in my own opinion) to rabbit pie. For myself I have no prejudices in the way of food. I have, besides squirrels, eaten bullfinch pie, jays, hedgehogs, and badger; and all were good, but the squirrels as good as any. Mr. Stuart (if I remember rightly) also came in once for a pie at my table made of 23 bullfinches shot on one morning in my gooseberry beds.

This is, however, a digression. To return to the squirrels. I have to thank one of our members, Mr. Oliver Farrer, for communicating to me the results of his own observations in regard to squirrels burying acorns singly, agreeing very exactly with what I have already mentioned. Perhaps some of our members may have observed and will tell us about the stores said to be laid up in holes of trees. It is very probably only from lack of observation that I have never come across one myself, but it seems somewhat remarkable that the habit of interring the acorns as I have described should not have been noticed in the larger Natural History works I have referred to. Whether any account of it may be found in some of our Natural History periodicals I hope to ascertain by-and-bye.

POSTSCRIPT.

In the discussion which followed the reading of the above the President stated his belief that squirrels stored acorns and other food in their *nests*; and he writes me word since that his game-keeper, Mr. — Shave—a very intelligent observer—is distinct and positive upon the point, from his own experience. I have also received several letters from members of the “Field Club” and others on the subject of Squirrels and their food. These communications support me in the account given above; the food being, however, not only acorns but “Walnuts,” “Hazel Nuts,” and “Spanish Chestnuts.” One correspondent tells me that the Squirrels with him feed on *fungi*. This habit I was quite aware of, as I see them frequently feeding on *Boletus edulis*, which in some seasons springs up in abundance on the lawn close to the Rectory windows. This was not mentioned in my observations above, as my object was not to go into the question of Squirrels’ food in general, but only to record their method of burying acorns.

O. P.-C.

May 3rd, 1890.



Notes on a Book called Domesday,

BELONGING TO THE MAYOR AND CORPORATION OF DORCHESTER.

By H. J. MOULE, M.A.



THE most ancient of tourists wrote of Egypt that it is a gift of the river.* So we may, in a figure say that the History of Dorset is a gift of the river—the alluvium of the Stream of Time. And a thin bed of soil it is when all is said and done. The stream, at least that portion of it which affects and concerns Dorset, is a small one, and brings down but small particles of drift and in no great numbers. I find only about 15 mentions of Dorset in the Saxon Chronicle, and often wish that some monk, or rather series of monks, of Cerne or Shaftesbury had kept that chronicle rather than they of Peterborough. Then we should doubtless know, what is unknown, how the Gewissas at last won this shire, and all about their great catastrophe at Badbury Rings, as Dr. Guest hath it. Well, the fewness of bits of history bearing on our county lends an added value to any item, however small, any particle that has been washed down to us by the Stream of the Ages, which may give us some insight into points connected with the past in Dorset. The old book which I have taken in hand to speak of may, perhaps, yield a particle or two of this kind.

* Herodotus. Enterpe 5.

It is called "Domesday," not Domesday Book. Proof that Domesday is the right name will appear later. Its purpose, in part, like that of the Conqueror's greater and earlier book of similar name, appears to have been to be a record, amounting to legal evidence, of sales and bequests. It helped the deemster, the judge, to arrive at his sentence, that which he deemed to be just and right, the doom. The book is of parchment, 1ft. 3in. by 1ft., and containing 171 leaves according to the numbering, but really about nine more. The book is in thick oak boards, stamped calf, with bossed scutcheons of brass, with Tudor badges on them. But for want of space the binding might be more fully described. In archaic picturesqueness it sets the book far above any other belonging to the Corporation of Dorchester, or those of Weymouth, or (I think) Bridport. The date of the book is doubtless about that of the earliest entry—viz., 18, Ric. II., 1394.

We come now to the contents of this book, first generally, then more specifically. Taken generally the volume begins with a code of bye-laws relating to the borough and to this book. Then follow several leaves containing enrolments out of order, being later than those which follow. After these we come to what seems to be f. i. of the original book. This part of the volume, up to about f. cliii., is kept with much care and order. It contains enrolments as after specified; and at the top of each page appear the names of the Borough Bailiffs for the time being, and the year of the reigning sovereign. After f. cliv. there is less regularity, both in method of enrolment and in the nature of the deeds recorded. We hasten now to speak of the contents a little more in detail. The first record, that containing the bye-laws, is a minute of a Curia Legalis held on the Monday after Michaelmas, 1415, before T. Wyke and W. Forde, Bailiffs. An inquisition was held "*per viginti quatuor probos homines et legales.*" They enact about 22 bye-laws. Nine others are added in different ink and writing, and then comes another, again different. The original laws are in ink of a somewhat greenish hue. Only a very few of the regulations can be specified. The first orders that no carcasses shall

be laid in the town, but that directly after death "*extra portas ville mittentur.*" Of course "*cadavera*" here means dead beasts only, for all three churchyards were in use until less than 50 years ago. The next bye-law calling for notice is No. 9, relating to the book of which we are speaking. "*Fiat eciam cone Registru ad certificand de tenementis in Burgo nro venditis heant balli certu Sigillu officii in medio sigilli erit leopardus coronatus et erit septu in circuitu sigillu ballor Dorcestrie. . . .*" Mr. Symonds, the Town Clerk, tells me that this seal does not exist now. The fee for each entry in the register was to be 6d. to the Bailiffs for sealing. "*Dabit ecia clico pr septura in Domesday tres denar.*" This regulation is rather puzzling, because it would seem that this Domesday was made and brought into use first and ordered to be made afterwards, as will appear presently. Again I don't see why the Bailiffs, in connection with Domesday, were feed for sealing. For no signs of seals appear. It may be meant, although not expressed, that the Bailiffs' seal should be used for the original deed before its being copied into Domesday. This bye-law is one of the proofs that the name of this volume is simply "Domesday." By No. 17 the Bailiffs are entitled to 20s. a year each, with fees on sales of tenements, and for sealing (as above), and the toll on wheat brought to market. By No. 18 the Town Clerk is endowed with 6s. 8d. a year, no less, and his fee "*de aliis rebus prout usitat.*" No. 21 orders that the common chest shall have three locks, the keys of which shall be kept, respectively, by three men thereto elected. The last law commands that the *curia legalis* of Hoched Term shall be held on the Monday after Easter Monday. The etymology of this word Hoched, also Hock Day, is pronounced doubtful. It is odd that in Ireland a very similar name belongs to Christmas Tide, as the *Encyclopædic Dictionary* tells us. To pass on to the enrolments, of which there are between 500 and 600. Of these 444 are designated *chartæ* (deeds of conveyance), 99 are *testamenta* (wills), whole or in part, and the rest are *feoffamenta* (the same as *chartæ*, it seems), *relaxationes* (releases), *literæ attornizatus* (letters of attorney), and at the

end a few long agreements with original signatures of the witnesses. There are two documents of quite a different sort from all the rest, of which one may as well be mentioned now. It is a record of the appointment of the Duke of Richmond to be High Steward of Dorchester, 12, Car. ii. This was the husband of la belle Stewart, who sat as Britannia, as stamped on our coins. Now, as to the mass of documents above described, as enrolled in Domesday, I must ask your indulgence and kind pardon for undertaking to write a paper about them. I have, truly, examined every one of them, some repeatedly, others more slightly. But I feel that it needs some one with more command of time than I have, and more avidity for details and minutiae, really to work what might turn out a valuable mine. Having thus disclaimed all pretence to full acquaintance with Domesday, let me hasten to give a few gleanings from my notes, made while working through the book most kindly lent to me more than once by the Mayor and Corporation. In the first place some details about Dorchester topography may be gathered. The possessions conveyed in the 444 chartæ above mentioned are nearly all of them burgages, burgagia. I don't find burgage in Skeat's Concise Dictionary. I take it, however, originally to mean a piece of property constituting the owner a burgess. The boundaries of each burgagium, tenementum, or placia are of course given—not as they would be in a Saxon charter, in the vulgar tongue, but in Latin, like the rest of the documents. Of course every description, nearly, involves the name of at least one street. We constantly find High-street, *Altus Vicus Occidentalis* or *Orientalis* as the case may be. But it is odd that the title "High" is not confined to our High-street. In f. lxxxviii., 7 Hen. VI., 1428—*e.g.*, South-street is called *Altus Vicus Australis*. Nay, Friary Lane was "High" in 7 Hen. IV., 1405. A burgage is "*in alto vico boreali que ducit versus fratres minores.*" There was a cross there, by-the-bye, at that same time—"ex opposito cruci que ducit versus fratres minores." Sometimes Friary Lane gets its name in English—Freren Lane, as in f. x., 21 Ric. II. But it is confusing to find two *Vici Boriales*. In f. xxxv., 8 Henry IV.,

1406—*e.g.*, we find a placia “in vico boreali . . . qui ducit versus Glydepath.” So this is our Shirehall Lane. I must name this street under another head. There seem to have been two Glyde Lanes, too. F. lxxxii., 2 Henry VI., 1423, says that a tenement in Durne Lane is bounded by Glide Lane. The lane connecting the rival North Streets, Pease Lane, is often named under various spellings—Pise Lane, Puse Lane for instance ; but it had a totally different name, Ulven Lane, in varied spelling. Thus in f. lxxxvi., 6 Hen. VI., 1427, there is “Iluenlane alias dict Puselane.” In f. cxx., 5 Ed. VI., 1551, there is another puzzle about another thoroughfare. I am credibly assured that formerly there was a path or lane from Shirehall Lane to the Walks close to Colliton Gate, and that this thoroughfare had the curious name of Twelve Men’s Way. Of course it was in Trinity parish. Now, in the folio above mentioned we find two burgages described as being in St. Peter’s parish, and bounded north and south by other burgages, east by a Vicus Regius, and with “Vicus Ville . . . Vocatus the Twelve Men Way” on the west. I can throw no light on the apparent existence formerly of two lanes, and leading, too, in different directions, both with the same strange name. We will note only one other name of a thoroughfare. In old times there appears to have been several houses on the west side of Glyde Path where now there is only one, and they were called Colliton Row. This name would seem to have been euphemised from one spelt in various ways—*e.g.*, f. cxx., 37 Hen. VIII., 1545, “Colyncolrow,” and f. cxl., 3 Eliz., 1560, “Collyn-colrewe Streate,” and f. cxxiv., 37 Hen. VIII., 1545, “Collynool Row.” Of names of individual houses and other minor bits of inner topography I may just name a few, almost as they come. In South Street (f. viii., 20 Ric. II. 1396) there was “placea vocata la dayne.” This designation occurs repeatedly about different localities. On the south side of High Street, in 21 Ric. II., 1397, (f. xi.), was “la Nywehyn.” This was doubtless the New Inn, a more modern re-building of which is Nos. 32 and 33, High West Street, formerly a hostelry under that sign. But here, again, there

is a double nomenclature, as there was in regard to lanes. In (f. cxiv.) 16 Hen. VIII., 1524, we find a burgage and shop between "hospicium vocatum le New Inne" on the east and Holy Trinity Church on the west. That is it was the George, on the spot where we are assembled.* But the other New Inn is mentioned more than once in English and Latin—*e.g.*, "novum hospitium" in 1 Hen. IV., 1399 (f. xvii). The Market Place was in its present locality. In 1 Hen. IV., 1399 (f. xviii.) we find named a street leading "a foro mercati versus fratres minores." The "ffyshe shammelles" were in High Street (f. cxvii) 18 Hen. VII., 1502. I do not know of any exact account of the date of the disappearance of Dorchester Castle. It may, then, be of interest to observe that it seems to have existed down to 2 Hen. IV., 1400, and to have belonged to the Friary. Then (ff. xxii. and xxxiii.) and in 7 Hen. IV., 1405 "castrum fratrum minorum" is mentioned. In South Street there was "Capella Sancti Rowaldi" (f. xxxi., 6 Hen. IV., 1404). Names of a few more "placeæ," burgages, &c., may be mentioned shortly—as "Ponnt," "le Stenenhou," "Crabellyfbern," "Le Pentys," "Gurnard," "Gaol," which was at least the third tenement or building from the foot of High Street. Before passing from this class of notes I may add a short one about the word "solar." Chaucer hath it that at Cambridge there was in his day "a gretè college clepèd Solar Hall." His meaning could hardly be that of the clerk who (f. xcii.) in 10 Hen. VI., 1436, writes about "stabulâ . . . cum solario super edificato pro equis suis et fenis"

I must now hasten to mention the disappointingly meagre information which I have gleaned from Domesday about the gates and walls of Dorchester. In Hutchins, 3rd ed., ii., 343, we find that in 1642 "H. Bushrode is appointed to kepe the keys, and to see the two east gates and that on Gallows Hill shut at night. . . . They are to open all the gates at break of day, and to shut all the back gates at candle lighting, and the east, west,

* This paper was read in the Dorset County Museum, which is built on the site of the George.

and south mayne gates betwene 8 and 9 at night." Now it is a puzzle to antiquaries to fix the place of the east gates. Domesday mentions an east gate several times, but only once so as to specify its situation at all clearly. In 12 Hen. IV., 1410 (f. xlv.), we find "*alta strata que ducit ad portam orientalem.*" This looks plain enough as evidence that the east gate was at the foot of High Street; for from the context I gather that *alta strata* here is High Street, and not "*Altus Vicus Australis*" or any other. It is the only instance of the word "*strata*" which I have observed in Domesday. Is it not just barely possible that it is used as indicating that this street was even so late as Henry IV's time still "*via strata*"—still a piece of the paved "*via Iceniana*," or, at least, of the *Decumanus Maximus*, of the lords of the world? If so, and if we are sure of an east gate at the foot of High Street, we get here a small bit of proof that that "*via*" did coincide with High Street, which has been disputed. Again, we get a little help at the other end of High Street. In (f. xlv.) 12 Hen. IV., 1410, we find a *burgage* in West Street, "*prope portam.*" Now, considering the massiveness of the Roman wall, the only one we suppose ever to have fenced Dorchester, it is most unlikely that the mediævals would have broken out new east and west gateways. May we not, therefore, take these mentions of those gates to be pretty fair evidence of the localities of the two ends of the *Decumanus Maximus* at least? This is not the place to say why I make this sort of reservation. I ought to add that in 1 Ed. VI., 1547 (f. cxxv.) the west gate, and even wall adjoining, seem to be ignored, speaking of a *burgage* and garden south side of West Street, between a *burgage* on the east and on the west "*campum de ffordyngton.*" This is now Mr. Burnett's and is precisely the one spot where a fragment of the wall still exists; so that non-mention does not mean non-existence. Of the south gate I find no mention, only of walls at the end of South Street. But then that is where the gate site is undoubted. Then we come to Durngate. The name makes one think of Dwr, water; but there is no particle of evidence to that effect, as far as I know. Mr

Cunnington tells me that Mr. Jowitt, formerly borough surveyor, in drainage works close to Culliford House, found what he felt sure were the foundations of gateway jambs. Now Durngate-street in Domesday is several times described as leading "versus Durngate." This, it seems to me, is of somewhat doubtful meaning, as perhaps not excluding the sense of leading towards it round a corner—namely, that of Gallows' Hill. This sense seems most to agree with another description in 13 Hen. VI., 1434 (f. xcvi.) speaking of "*venellam extendentum ab est strete usque Durngate.*" This "*venella*" would appear to be Bell Street and Gallows Hill, and Durngate to be the one whose foundations were seen by Mr. Jowitt close to Culliford House. But I do not quote the above description as being conclusive. To end this long section about the gates I am glad to have a pretty good testimony of the site of the north gate, towards which Shirehall Lane is in Domesday several times said to lead. In f. xcix., 19 Hen. VI., 1440, a *burgage* is described as in that lane, and "*ad portam borialem et ex parte orientali vici ibidem inter clausum domini de ffordyngton in parte boriali et burgagium W. Fowler.*" Now this is distinct enough, and seems to place the north gate in Glyde Path, opposite the upper boundary of Cator's Close, which is the limit of the manor and parish of Fordington there. This north gate must be one of the "back gates" of 1642 "That on Gallows Hill," Durngate as I suppose, was another, and the second east gate a third. I do not see anything in Domesday about a gate at the foot of Friary Lane, a second north gate at the end of the second north street. But in one or more of the old plans of Dorchester a bridge is marked there. Now, if the wall extended right round Dorchester, north side and all, as Stukeley asserts, this bridge almost necessarily implies a gate. Much more, of course, might be said about the gates and walls—very much more—but this is not a fitting opportunity.

I have now to note the indications of the possessions of the Church in the borough, including a few money legacies, simply naming the religious communities or persons owning property. I take them nearly as they occur in my notes :—The Fraternity of

St. Mary in St. Peter's Church held property all over the town. In 7 Hen. VI., two burgages are conveyed to the Fraternity, one by executors of J. Jurdon, of Wolveton. A deed (B. 5 in the Corporation strong room) by J. Williams and Roger Howell, wardens of the Fraternity of St. Mary, conveying a burgage to J. Stratforde, goldsmith, is stated to be executed with the consent "*confratrum et consororum*," showing that it was a sisterhood also. The Prior of St. John, of Dorchester ; the Prior of Mayne, again "*Sancti Johanni Hospitalis Jerusalem in Anglia apud Mayne* ;" the Abbot of Abbotsbury ; the Prior of Christchurch ; the Abbot and Convent of Cerne ; *Fratres Minores*, in the Friary of course ; the Abbot of Bindon ; the Chapel of St. Rowald ; two Fraternities *Sanctæ Trinitatis de Dorchester* ; the Rector of Holy Trinity ; the Rector of All Saints' ; the Fraternity of the Holy Cross of St. Peter's ; a silver spoon left to the Fraternity of the Holy Cross of Puddletown ; the Chantry of King Syward ; the Wardens of Holy Trinity ; the Rector of St. Peter's ; the Wardens of All Saints ; and the Monastery of Milton.

I have now to note an item or two in three wills from a number enrolled in whole or in part. In 1423 (f. lxxx.) Reginald Jacob makes his will. He, like several other testators at that time, leaves money—viz., 12d., to the fabric of Sarum Cathedral and to that of St. Peter's here. But, considering his Hebrew name, and that by some Marketjew is thought to be so called from a Jewish colony there, it may be noteworthy that he bequeaths a missal to the fabric of the Chapel of the Blessed Katherine, of Markesewe, in Cornwall. He leaves a sheep to the fabric of Charminster Church. He had "everything handsome about him"—he leaves three silver cups. In 11 Hen. VI. (f. xciv.), 1432, Agnes Hazard leaves conscience money—6s. 8d. for forgotten tithes, also 16d. a year to the Rector of Holy Trinity for a requiem. In 1441 (f. c.) T. Waryn, Rector of Holy Trinity, makes a number of bequests. It would almost seem as if priests then were not quite so strict about a canonical habit and no other. He leaves to Joan Pasco his best mantle (togam) and a maser, to Edith his daughter her best girdle,

and to his son John a black girdle embroidered (harnizatam) with silver.

It only remains to say a word about one or two isolated entries which seem to demand notice, and to enumerate some of the old Dorset names occurring in Domesday.

In 19 Edward IV., 1479, (f. cvii.) a curious enrolment occurs, wholly unconnected with borough property. Robert Syred, of London, mercer, gives an English receipt to Abery Cornborough, Esq., and Richard Rimeson, mercer and alderman, of London, for £200, price of "3 skore pipes of * ode." They have procured "hit to be enrolled in . . . Dorchester yn a boke ther that is called Domesday." Here, again, we have the name of the book. I may here note that when cataloguing the Dorchester Corporation archives I found two parchments of A.D. 1501, endorsed as being enrolled "in Domysday" on ff. cvii. and cviii. respectively (which, by the bye, I find was really done), so this is a third evidence of the oddly concise name of the volume.

A portentous place name occurring here and in Weymouth must not be passed over. Near Weymouth Harbour is Helen Lane. Now this is softened from Hell Lane, so called from a house the name of which was Hell, neither more nor less. A portion of it is now extant at the east end of the lane. I hear some one saying that it was a gambling house. Not at all. It was at one time, in the 17th century, the abode of Master Green, M.P. for Weymouth. And here at Dorchester, on the north side of Pease Lane, was, in 1400, a placia "Vocata Helle." I can offer no explanation.†

It would leave this paper altogether incomplete, even in its slight way, if some of the family names were not noticed. It is difficult to choose among those in my notes; however, I take them in order of occurrence. In 1409, J. Gould, de Weymouth; in 1415, J. Frampton, de Waye Bayous. In 1416 he is designated as

* Probably wood.

† As a mere guess I may add that it is thereabouts in Pease Lane that an ancient covered way was struck; and that just possibly this may have given the name Hell. This word means "the covered place" according to some authorities.

“de Vpwey,” which, of course, is the same place. In 1421, J. Lups ; in 1423, J. ffauntleroy ; in 1424, Edward Goulde ; in 1425, J. Jurdan, of Wolveton ; in 1437, Robert Rempston, “de Purbyk ;” in the same year, J. Wydford, of Weymouth ; in 1441 two names honourably known here now, Bryer and Waryn, the same as Warren I take it ; in 1482, J. Mone, armiger, doubtless Mohun ; in 1483, Robert Coker, armiger ; in 1542, J. Wylliams, armiger ; in 1556, T. Trenchard, “de Wolveton ;” in the same year, Thomas Seymour Knight, Lord Seymour, of Sudeley, as having possessed a tenement formerly belonging to the Preceptory of Mayne ; in the same year, Morgan Hayne ; in 1557, Comes de Bedford, dominus Russell ; in 1565, Robert Williams, armiger, of Winterbourne Herringstone ; in 1574, John Hennyng. In the 17th century we find, among others, Denys Bond, James Gould, W. Whiteway, Matthew Chubbe, J. Whetstone. Also I cannot refrain from recording the persistence of the uncommon name Alner, at Dewlish. People of that name are, or very lately were, living there, and in the 17th century I find that one Alner, of Dewlish, compounded for tolls on his wheat brought to Dorchester market.

Such are the gleanings of gleanings, my notes on my notes on Dorchester Domesday. My feeling in poring over this interesting old book must be taken for what it is worth ; but, well or ill founded, it amounts to a pleasant conviction that our little borough was not doing badly in Domesday times. It must have made a good recovery from the frightful depopulation and depression caused by Odo or some * one soon after the conquest. But it was a little borough truly. The great grey wall of the pomœrium of Durnovaria was all too large for Dorchester. Prince’s Street and Trinity Street were not. The square then enclosed between those modern street ways and parts of the west and south reaches of the wall, and repeatedly named as Les Westwalles, seems to have been all arable land, as, indeed, a good part of it was a nursery in my time. And in Les Estwalles, where now, even, there is an acre or two of pasture in All Saints’ glebe, there was in the 15th century

* Such as Sheriff Hugh Fitzgrip.

still more. Nay, near the foot of High East Street there was a "toft" called Rakehay. But, as I said, while Domesday was being filled with its chartæ and testamenta, the burgesses bought and sold to some purpose. Money was passing about in Dorchester—not much in quantity, but a shilling to the fabric of Salisbury Cathedral was not bad value in those days. Two proofs of what I say catch the eye on all sides as you near the old borough. That little borough must have had well-to-do burgesses to rear the graceful St. Peter's Tower and Church, begun when the Town Clerk had got f. l. of Domesday. There must have been wealth here to build the noble Tower and glorious, but now perished, chancel of Fordington St. George. Many a comely house, with cuspy lighted oriel and vaned dormer, must have beautified the altum vicum, the vicum australem, and harmonised with the Churches, with the Chapel of St. Rowald, with the Franciscan Friary. It is all gone, save St. Peter's Church and St. George's Tower; but it seems for a moment to come into sight as you read of the burgages recorded between the heavy oak boards of Domesday.





On some of the Chief Peculiarities in the Lepidopterous Fauna of Portland.

By NELSON M. RICHARDSON, B.A.



It would, I believe, be generally considered that if two portions of land, not very distant from each other, shewed any striking differences in their fauna or flora, they would be likely to be separated from each other by some considerable barrier, such as a continuous range of mountains, or a wide or deep arm of the sea, the great depth shewing that a long geological period had elapsed since they were united. On the other hand, if we find two pieces of land separated from each other only by a narrow strip of land or water, we expect that they will contain much the same fauna, especially if the soil and general style of the country do not differ much.

Now the island, or rather peninsula, of Portland does not lie at a great distance from the mainland and the intervening water is shallow. Besides this, Portland is actually joined on to the mainland by the Chesil Beach, an isthmus of about $9\frac{1}{2}$ miles long and only 100—200 yards wide for 8 miles of its length. On the mile and a half, or thereabouts, over which the road passes from the Ferry Bridge, it is considerably broader and more or less clothed with vegetation, and at the Ferry Bridge approaches to within



1.
nat. size.



2.
nat. size.



3.
nat. size.



1a.



4.
nat. size.



5.



6.



7.



8.



9.



10.



11.



NEW AND RARE LEPIDOPTERA.

EXPLANATION OF PLATE.

1. *Zygæna filipendula*, L. (nat. size), with extra wing in the place of the left hind-leg; bred by N. M. Richardson, at Cambridge, 1877.
- 1a. Outline of extra wing of No. 1, showing the venation.
2. *Heliophobus hispidus*, Hb. (nat. size), small dark variety from Portland, taken by N. M. Richardson, October 7th, 1887.
3. *Heliophobus hispidus*, Hb. (nat. size), extreme dark variety of ordinary Portland form, taken by N. M. Richardson, September 13th, 1889.
4. *Heliophobus hispidus*, Hb. (nat. size), extreme light variety of ordinary Portland form, taken by N. M. Richardson, September 14th, 1888.
5. *Coccyx subsequana*, Haw. = *abiegnana*, Dup. = *pygmaea*, Sta. (non. Hb.), from specimens taken by N. M. Richardson near Weymouth, May, 1889.
6. *Gelechia Portlandicella*, Richardson, n. sp., from specimens taken by N. M. Richardson at Portland, June, 1889.
7. *Chrysoclista bimaculella*, Haw., from a specimen taken by N. M. Richardson near Weymouth, June 13th, 1889.
8. *Lithocolletis Anderidae*, Fletcher. Several specimens of this rare and local species, which has hitherto only been taken in Sussex in very small numbers, were bred in May, 1890, from mines in birch found at Eloxworth in the previous autumn by the Rev. O. P. Cambridge and N. M. Richardson.
9. *Trifurcula atrifrontella*, Sta., from a specimen taken at Eloxworth by the Rev. O. P. Cambridge in 1889, and determined by H. T. Stainton, Esq.
10. *Nepticula auronmarginella*, Richardson, n. sp., from specimens bred from bramble by N. M. Richardson near Weymouth, 1889.
11. *Nepticula ancofasciella*, H.-S., from specimens bred from *Fragaria vesca* at Eloxworth by the Rev. O. P. Cambridge, May, 1890.

100 yards of the mainland. There is not, therefore, any very great barrier between Portland and the mainland.

The localities on Portland may be roughly divided into the top of the island, the undercliff, and the Chesil Beach. The top would be, were it not for the quarries, very much like many of the downs along the coast, and there are many pieces of undercliff here and there between Sandsfoot and Purbeck not so extensive as that at Portland, but of something the same character, with the exception of the rocks and stones, and where one would expect to find the same moths.

The Chesil Beach between Portland Station and the Ferry Bridge presents, perhaps, the greatest contrast to anything else in the neighbourhood in its general characters, and it seems to me that it is probably this strip of land which, to a great extent, at all events, causes the peculiarities which exist in the Lepidopterous fauna of Portland.

It is most important to study all the fauna and flora of a portion of land in order to get all the evidence we can on the subject of its past history, but perhaps no part of the animal or vegetable kingdom will give us so much trustworthy information as those creatures which have very small means of locomotion. Amongst these are the smaller moths, which are, as a rule, of very retiring habits, and never go far from their food plants. They have a short period of flight, perhaps an hour or less in the evening, and often the same in the early morning; during the rest of the night they sit about on their food plants, or settle down in the herbage and rubbish around them, and in the daytime many of them are scarcely to be found at all, even when one searches most carefully and patiently for them. Of course these remarks do not apply to all the small moths, but only to the majority; some are always ready to move on the slightest provocation, and others are only rather sleepy during the daytime and active at night. It must always, however, be taken into consideration that most of these small moths are entirely dependent for their existence on one, or, in some cases, two or three plants, on which alone their larvæ can feed, so that it is

necessary that the particular food plant should be present in order that the moth may exist in any locality, and causes which destroy the food plant will, therefore, also destroy the moth, as well as other causes which act primarily upon the moth. On the other hand, the seeds of the plant may be transported to a distance by various causes, such as birds, ocean currents, &c., which would not affect the moth, so that in the new locality the moth will not be found. The distribution of the moth will, therefore, give much more reliable evidence as to the past history of the locality than that of the plant. I must confess, however, that I do not see any sufficient reason why the moths which are peculiar to Portland should not occur in other places in this country—nor can I suggest any reason why, if they formerly occurred in other places in this part of the world, as is, I suppose probable, they should have died out elsewhere and survived at Portland. It seems to me that very extensive experiments in the way of introducing these moths into other localities apparently like Portland and observing the results, might possibly enlighten us on this subject.

I propose now to mention individually some of the moths which are more or less peculiar to Portland, with a few remarks on each, after saying a little about the entomology of the place generally.

Portland has got a very bad name amongst entomologists, partly, probably, from the experience of those who have come knowing nothing of the locality and gone away with very little success, as they would in that case be likely to do, partly from the weather, which is often bad and generally uncertain if the wind is from a fairly warm quarter, and partly from the very rough nature of the ground, which is certainly inconvenient, not to say dangerous, especially in night collecting, not to mention the pleasures of being pelted by small boys from the top of the cliff with stones and other missiles, and occasional attacks by coastguards and sentries. It is certainly a bare and unpromising looking place, with scarcely any trees upon it, except the small clump at Pennsylvania, so that it is rather surprising to find that there exist on it at least 570 out of about 1,400 Dorset, and about 2,100 British species of

Lepidoptera. Most of these species are not extremely local in their distribution, but are found more or less over a considerable area, though in many cases they are commoner in one spot than over the rest of the part where they occur. Amongst the exceptions to this statement are those moths whose food plant is very local, and from these I propose to give two instances of much interest.

In one part of Portland there are several small boggy places with more or less of a pond in wet weather, one only of these ponds being permanent. Now, although each of these damp spots only covers a few square yards, we find in them four species of moths (*Scoparia pallida*, *Bactra lanceolana*, *Glyphipteryx thrasonella*, and *Coleophora caespititiella*), attached to the rushes which grow there, and one which feeds on another common bog plant, of which a small patch grows in each locality. This is interesting as shewing how weak flying or retiring species are preserved in full vigour, even by very small isolated patches of their food plants. The three chief damp spots are at least a quarter of a mile from each other, and I should doubt if any individuals (especially the females), of these five species were likely to fly so far, as they are all small and quiet in their habits.

The other instance that I propose to mention is that of a plume moth, *Agdistes Bennetii*, which is here found feeding on sea lavender (*Statice binervosa*), which grows on cliffs by the sea, its usual food plant being *Statice limonium*, an inhabitant of salt marshes. I have found *Statice* growing on the Chesil Beach, but *A. Bennetii* has not yet been taken there. It is not at all a variable insect, but Portland specimens are rather lighter coloured and about one-eighth smaller than salt marsh ones from the Isle of Wight. In connection with this species I may mention that the plume moth family is well represented at Portland, as 17 out of about 35 British species occur there.

The moth that I shall first allude to of those confined to Portland is one which was described by me in the last volume of the Field Club's proceedings, and figured in the plate vol. x., p. 197, and also in the Ent. Monthly Mag., vol. xxv.,

p. 63, *Epischmia Bankesiella*. Mrs. Richardson and I took two specimens of this moth, a male and female, in 1887, and two females in 1889, and it is essentially a Portland moth, as it has not been taken elsewhere in the world, and is at present only known to science by these four specimens. The occurrence of the last two is especially interesting, as giving very strong evidence that the moth is a permanent resident on Portland, and not merely a chance visitor. It is not one of the very small moths, as it is a little over an inch across the wings; but still from the very little that I have been able to observe of its habits, from its apparent rarity in Portland, from its having hitherto escaped notice, owing probably to the fact that nearly all the collecting there before 1887 has been done in the daytime, and more especially from my knowledge of the habits of allied species, I should say that it was not a moth that was likely to go to any great distance from the spot where it lived in the larva state, but was, on the contrary, likely to be sluggish and retiring in its habits, appearing on the wing for a short flight at night only when the weather happened to be specially favourable to its tastes, and hiding itself at other times most carefully from observation. I do not at all know how or on what plant the larva feeds. There is no species that comes very close to it in this country, but some of its nearest allies occur in the South of France and elsewhere. I am sorry not to have more information to give about this moth, but hope to be in a better position to do so at some future time.

I come next to *Acidalia degeneraria*, "The Portland Wave," a much better known species, which has only been taken in Portland so far as this country is concerned. The Rev. O. P. Cambridge has also, I believe, met with it in Corfu. It is well known to entomologists in all its stages, though I am not aware that the larva has ever been found at large. Many eggs have, however, been laid by captured female moths and the larvæ reared on chickweed (*Cerastium*); they will also, like many other larvæ, eat knot grass (*Polygonum aviculare*), but it is impossible from this to say with certainty upon what they feed in a state of nature. One cannot help thinking,

however, that it must be one of these very common plants, or something nearly allied to one of them. It is an inconspicuous brown larva, which falls off its food plant on being touched, and would, therefore, require much looking for. I certainly found this moth commonest last season (1889) in one rather limited area, where I took 8 or 9 out of a total of 11 on July 2nd—all in the daytime—but I doubt whether it is, as a rule, so local as I then found it.

In connection with this moth I may mention that the genus *Acidalia* contains 25 regular British species, besides 2 or 3 whose claims are not quite so well founded, though they have no doubt occurred in this country. Of this number 11 have been recorded from Portland. I have met with all but two, of which one (*A. immutata*) is recorded by Mr. C. W. Dale, and the other (*A. remutata*) by Colonel Partridge, who has been stationed at Portland for two seasons, and has, therefore, had great opportunities for collecting. The genus is, therefore, fairly well represented at Portland, and one might judge from this that it was a favourable locality for the preservation of one of the species which did not occur elsewhere; yet there is nothing so very striking about this fact as there would be if 15 or 20 out of the 25 species occurred instead of 11. *A. degeneraria* is not of very retiring habits, as it is easily disturbed in the daytime by beating the bushes; but it generally flies out only a very short distance and then settles on the ground or a leaf with its wings spread flat out, and looks helpless. From my experience of this moth in the daytime I should have said that it was one of the weakest flyers that I had seen of the genus *Acidalia*; my experience of it by night when it flies naturally has been very small, but Colonel Partridge, who tells me that he has taken a good many at night, says that he considers it a very quick-flying and difficult insect to catch at light. He adds "I never could manage to do much with it at dusk, when it invariably began to fly, and at the big lamp I found it hard to take. I never found its flight weak." He says also that its flight resembles that of *A. promutata*, which is anything but a weak flyer. Until I heard this from Colonel Partridge I was disposed to

think that the weakness of flight which I thought characterised it might have something to do with its very limited distribution in this country ; but this is evidently a mistake, and it must be controlled by other causes.

As regards the British species of this genus, one—*A. circellata*—is confined to the neighbourhood of Manchester. The only record of the larvæ that I can find (E. M. M. iii. 90, iv. 132), merely states that they were hatched from eggs laid by a captive female, and were fed on knot grass. This, however, does not throw much light upon the reason why it is so local.

A second species, *A. immorata*, which has recently been discovered near Lewes, is entirely confined to that neighbourhood, so far as this country is concerned. It does not appear to be rare in the place where it occurs, and it seems strange that such a large insect should not have been noticed before. If, however, it is a recent introduction, it is not unlikely that it may extend its range gradually, if the neighbouring country is suitable to its wants.

Perhaps the next most local species is *A. rusticata*, which occurs at Portland, but only in a few spots and not abundantly. It also occurs more commonly in the neighbourhood of Darenth Wood, Kent ; but I am not aware of any other British locality. The larva feeds on hawthorn, and will also eat ivy, lilac, and bramble. I do not see much difference between the Portland and Darenth Wood specimens. I have met with this species both by day and night at Portland, and do not consider its flight particularly weak. The other more local species are *ochrata*, *rubricata*, *contiguaria*, *holosericata*, and *strigilata*, especially the last. The other 17 are more generally distributed, five or six only being distinctly common. From this we see that it is the habit of the genus to produce local species, and though, to take an instance, Darenth Wood apparently resembles hundreds of places in England far more than it resembles the part of Portland where *rusticata* occurs, I suppose that there must be some conditions specially favourable to this species in each of these places. Probably there is some constitutional quality in

many of the species of this genus which makes them peculiarly susceptible to external influences and unable to live, except under very favourable conditions.

The only other moth which occurs regularly in this locality and has not been found elsewhere in the British Isles is *Butalis siccella*. Its occurrence was noticed by Mr. Eustace Bankes in Ent. Mon. Mag. (Vol. xxiii., 275, xxiv., 246), and also in Vol. ix., p. 118, of our "Proceedings," and a figure of it given in Vol. x. It is very closely allied to *Butalis variella*, which occurs on heaths in this county, and was formerly looked upon as a small variety of this species, until Mr. Bankes suggested its distinctness. He gives as food plants of the larva *Thymus serpyllum*, *Lotus corniculatus*, and *Plantago lanceolata*, all very common plants. In this case it is very difficult to see any reason why this moth should not be generally distributed. It is certainly not limited by the range of its food plants and is not of specially retiring habits, though it does not, as far as I have observed, indulge in flights of more than a few yards in length, its usual movements being a series of jumps something like those of a grasshopper, which lengthens its leap by spreading its wings, a mode of progression which is also common to *B. variella*. Not only is *B. siccella* confined to this one locality, but even here it is extremely local and only found in one spot of very limited dimensions. It is also found in Germany, where it occurs in "Sandy Scotch Fir Woods."

One other moth, *Hadena albifusa*, a North-American species, is only known as British from a single capture by Colonel Partridge at Portland, in 1888. It is said by some authorities to be a variety of *H. chenopodii*, a not uncommon moth at Portland, which would account for its presence there; other authorities, however, maintain that it is distinct. I have not seen it, so can give no opinion. (E. M. M., xxv., 180, 228.)

Two specimens of another species, *Luperina Dumerilii*, were taken at Portland Lighthouse about 1858, the only other British record that I know of being that of 3 specimens taken by Mr. Rogers in the Isle of Wight at about the same time (Ent. Ann.,

1860, p. 140). If it is, as I believe it to be, much like its nearest allies, it is a very fast flying, strong-winged insect, and might have come from a considerable distance. It would also be very much affected by the attraction of light. Foreign, and indeed exotic moths and butterflies do occasionally appear in most unexpected quarters from unknown causes.

In the case of the above moths, which also occur abroad, we assume from the great general resemblance (for we rarely, if ever, find exact resemblances in nature) that the Portland and foreign moths have had common ancestors which resembled themselves, and not that, for instance, the Dorset *Butalis siccella* is descended from the *B. variella* of the Dorset heaths, and has altered its form gradually through the difference of its surroundings, and that the German *B. siccella* has had an independent origin. *B. siccella* must, therefore, at some time or other have occupied for a greater or less period every intermediate space of ground on a line, probably a very crooked one, drawn between the place where it is here found and some other present locality, and must have disappeared again from every part of this line. If *B. siccella* were the only example of a moth not found elsewhere in this country, there would be less evidence against a theory that it and the Dorset heath *B. variella* were descended from the same source, and that *siccella* had become smaller and darker, and otherwise altered its form, either through natural selection or from the fact that its new food plants would only produce small dark specimens. The latter has a parallel case in the common *Hypsipetes elutata*, which has a small dark form, the larva of which feeds on bilberry in Yorkshire, sallow being the ordinary food plant. If we adopted this theory we should have to say that the German *B. siccella* had come to the same form as the British one independently, which would be a most extraordinary coincidence, considering that the climate and surroundings must be very different in the two cases. But I think that on the whole it is much more simple to conclude that the resemblance between the German and English *B. siccella* is not accidental, but that they belong to the same stock, though it is difficult to account for the

survival of our small, but flourishing, isolated colony. There is one other possible explanation—namely, that the moths were in some way imported direct at a comparatively recent period. But it is hard to see how such an insect could have crossed over from the Continent, and that it should, in the first place, have done this, and in the second place arrived at the very patch of ground where alone it could survive, is, in the highest degree, improbable. Had it crossed over in this way one would certainly have expected that it would not have been so extremely local, but if it had survived at all, would have spread to where its food plants occur in the neighbourhood. I prefer, therefore, to adopt the theory that it is a survival from ancient times of the common ancestors of itself and the German *B. siccella*.

One of the most interesting moths at Portland is *Scoparia mercurella*, a very generally distributed and common species, of which the larva feeds in moss ; but at Portland, and nowhere else in the world, so far as I am aware, is found the very striking variety of it, called *Portlandica*. This variety has two pure white bars crossing the fore-wing, which, in ordinary specimens, are dark grey. The extreme variety is only moderately common at Portland, the bulk of the specimens being intermediate between it and the typical dark form, which is, perhaps, at Portland the least common of all. What appears to be the most simple explanation of the existence of this white variety is that a specimen with this tendency being less visible on the rocks than its darker relatives, is less likely to be eaten by birds, and would, therefore, probably leave more descendants than the dark form, as it would be likely to have a longer period of life during which to lay its eggs ; the tendency to whiteness would in this way increase in every generation. If the light form has, as seems probable, a real advantage over the dark form at Portland we might expect that the latter would in time die out there altogether. Why this has not already occurred I propose to consider later on.

I should mention here that there is another allied species, *Scoparia dubitalis* (of which three varieties are figured in our last

vol. of "Proceedings"), which tends to become very pale in colour in some localities on the South coast. I exhibit a drawing of this pale *var. ingratella*, and also one of a pale variety, taken at Portland by the Rev. O. P. Cambridge, which does not, however, at all resemble the usual pale form *ingratella* (Proc. D. N. H. and A. F. C., vol. x., plate 13, p. 197, figs. 9, 10). Strange to say, though this species is extremely common at Portland, I have never seen there any of the very light varieties. My experience is that those taken there are, as a rule, very constant in shade, and only a little, if at all, lighter than the ordinary inland form. This fact, and also the fact that there are much whiter rocks in many other places where *S. mercurella* occurs and no *var. Portlandica*, would tend to throw doubt on its connection with the whitish rocks of Portland. But we know so very little of the laws of variation and its connection with the form or colour of external objects that, though we can invent theories to account for the facts which we observe, such as the white colour of this variety, it is different when we come to take what appears to be a similar case, as of *S. dubitalis*, and apply to it the same theory, for, as in this particular instance, we often find that it is impossible to deduce results in accordance with our facts. What seem to us the merest trifles are often matters of life and death to insects, and I think that there can be no doubt that they are greatly influenced in their variation by causes to which, if we thought of them at all, we should not attach the slightest importance, and that this is the reason why it is so hard to lay down any laws of variation for moths. In *var. Portlandica* perhaps the effect of the white rocks is predominant, and a white variety results; in *S. dubitalis* other causes may produce the light variety in other places, and, perhaps, the fact of its possessing ochreous and grey markings on a whitish ground may protect it at Portland, as well as, or better than, if it were more white. If this is the case the cause which is present in *var. Portlandica* would not exist in *S. dubitalis*. An interesting question in connection with this variety is as to the reason why the dark form is found at all in Portland, as well as the *var.*

Portlandica. This is not the case of a species which has an endless variety of forms, of which scarcely two are alike, like *Hypsipetes elutata*, in which the variation seems to have not two, but many extreme forms, so that if one tries to arrange a long series of, say 200, different forms in a natural order, so that the grades of variation between consecutive individuals are almost imperceptible, one finds that one gets into great confusion; and if one takes any two extreme forms and picks out a series connecting them, one only uses a very small number, perhaps 20 out of the whole 200—the rest have no place in this line of variation, but belong to some other line between two other extreme forms, and often the same specimen will be rightly placed in two or more of these lines, the fact being that there are a great many distinct points of variation which exist quite independently of each other in different parts of the same individual. In *S. mercurella* at Portland, however, the only important variation is that from the dark form in the direction of *var. Portlandica*, which greatly simplifies matters, so that a long series of Portland specimens could be arranged in a continuous line between the extremes of the type and the variety. This leads us naturally to the conclusion that all these intermediate forms are produced by the same cause that produces *var. Portlandica*, and that no other important cause of variation is acting on this species at Portland. As the dark form is the one that occurs everywhere else, we may fairly assume that at some distant period it was also the only form which occurred in Portland, and that from the light colour of the rocks, or from some other definite cause or causes, which gave to the lighter specimens a slight advantage over the dark ones, the *var. Portlandica* has been developed. But one would naturally expect that as Portland is only a small locality, the interbreeding that would necessarily take place would prevent much variation in the shade of the moths at the same period, and that the whole of them would gradually get lighter together until all were of the white variety. But, instead of this, we find all shades. It seems to me that the most simple way of accounting for this fact is that specimens of the ordinary

inland dark form have, from time to time, come on to Portland by way of the Chesil Beach, and have, in conjunction with the white thoroughbred Portlanders, caused all these intermediate forms that we see. The dark variety is, as I said, rare in Portland, which would be the case according to the above theory ; for, though the moth may very well occur on the Chesil Beach, it is certainly not abundant there, and, therefore, the coming of a specimen into Portland would not be of frequent occurrence, and any but the original immigrants would probably be more or less light in colour. I have noticed that if one takes three or four *S. mercurella* close together they are often all of about the same shade of colour. Should further observation prove this to be generally the case, it would tend to shew that the individuals of one brood did not vary much among themselves, and hence that if no fresh specimens had been imported, all the *S. mercurella* in Portland would resemble each other far more than they do, and would probably be by this time *var. Portlandica*, or something very near it. With regard to the opposite case of a *var. Portlandica* finding its way to the mainland, if such a thing did happen, it would there have no advantage over the dark form, and its effects would probably be scarcely visible after a few generations.

Of other light forms, I think the most striking is the light form of *Gnophos obscurata*, which is found at Portland. This species varies much in depth of colour and distinctness of markings, those from the heaths in this county being very dark grey, whilst those at Portland are much lighter, very light grey as a rule. This species is found in many localities and varies much, but is generally fairly constant in its shade in the same place.

Larentia olivata and *Epunda lichenea* are rather light in colour at Portland. On the other hand, *Camptogramma bilineata* is dark, and *Cnephasia conspersana* is much darker than on the Lulworth and Swanage coast.

I took a nearly black variety of *Xylophasia polyodon*, and I believe that Colonel Partridge took a similar one ; all other specimens of this abundant moth that I have seen at Portland have been,

however, of the usual light Southern form. This dark variety is occasionally found in the South of England, but only occurs regularly in Scotland. At Rannoch, in Perthshire, I found it in 1876 with the ordinary light form, and intermediate ones in much the same way as the *var. Portlandica* occurs at Portland. None of these species, however, are specially fond of sitting on the rocks. The following are the moths, besides those particularly mentioned, which I have noticed as being most subject to variation at Portland :—

Aporophyla australis, the ground colour varies from white to dark grey.

Heliophobus hispidus, dark and light forms occur. (See plate.)

Luperina testacea. Besides the ordinary varieties, including a very dark one taken by myself, I saw a beautiful, very distinctly, and delicately marked variety (*Guenéei*) of this species taken by Colonel Partridge this year.

Apamea basilinea, varies in tint of ground colour.

Apamea oculea, varies, if possible, more than usual.

Miana strigilis, varies very much, and has a variety, with a bright coppery-red bar, which I have not seen elsewhere, but which is here not uncommon.

Miana furuncula, seems to vary even more than I have seen it do at Brandon, in Norfolk, where it was very abundant and variable.

Grammesia trilinea, *var. bilinea*, is not uncommon.

Agrotis exclamationis. I saw a variety taken at Portland with confluent spots—it is generally rather variable at Portland.

Agrotis corticea.

Agrotis ripee, varies from almost white to grey and pale ochreous, speckled with darker.

Triphaena orbona, has many varieties, including reddish-brown and blackish varieties.

Triphaena pronuba, shews beautiful varieties, dark and light, and variegated.

Anchocelis lunosa, ground colour very variable.

Eupithecia absynthiata, variable in the amount of marking.

Cledeobia angustalis, varies in ground colour.

Herbula cespitalis. I took some beautiful specimens this year with much more colour than usual.

Stenia punctalis, has dark and light varieties.

Crambus culmellus, a richly coloured, almost yellow, variety occurs at Portland.

Anerastia lotella, varies much in shade from almost white to dark brown, and has sometimes a pure white costa.

Homœosoma sinuella, varies in the amount of marking.

Pempelia dilutella. This species is usually constant in the same locality, but at Portland both the light form (*subornatella*) and the dark form (*adornatella*) are found, as well as intermediate varieties, which are the commonest, and would mostly be referred to the so-called species *adornatella*. (See E. M. M. xxvi., 20, 139.)

Peronea hastiana. I saw a short series, bred by Colonel Partridge this year, which was much more variable than usual.

Peronea tristana. In Carmarthenshire I found this species very constant and brownish in colour, whereas at Portland the ground colour varies from white to dark brown and grey.

Sericoris cespitana, very light varieties occasionally occur.

Sericoris lacunana, the blackish variety *herbana* occurs.

Phoxopteryx comptana, varies much.

Catoptria cecimaculana, the ground colour varies from ochreous to grey.

Eupœcilia rupicolana, Mr. C. W. Dale has a black variety from Portland ("Lepidoptera of Dorset," p. 46, by C. W. Dale).

Chrosis tesserana, varies much.

Argyrolepis zephyrana, varies chiefly in size, which is interesting on account of the existence of a larger but otherwise very similar species (or variety ?)—*A. maritimana*, whose larva feeds on *Eryngium maritimum*. I have specimens of *A. zephyrana* from Portland almost as large as some of *A. maritimana* from Essex, but the latter has not yet been found at Portland, though its food plant occurs there.

Gelechia desertella, has light and dark varieties.

Gelechia mundella, the ground colour varies from white to nearly black.

Gelechia marmorea, varies much in shade of colour and distinctness of markings. It is sometimes almost black.

Glyphipteryx thrasonella, var. *cladiella* occurs.

Coriscium cuculipennellum, varies in the amount of marking.

Laverna miscella, varies in shade of colour.

All these species vary considerably, and, taking them all together, I should say that Portland was not a place where dark or light varieties predominated, but was decidedly a place where moths were more given to general variation than usual.

It may seem rather invidious to select one moth out of 37, and that not the most variable one; but as *Heliophobus hispidus*, though not confined to Portland, is looked upon by Dorset entomologists as one of the most beautiful and striking species found there, I think that I may be excused for doing so. I have exhibited some of the varieties of this moth, and Mrs. Richardson has figured the three most striking ones—one a very dark small variety, which is very rare at Portland, the others the lightest and darkest that I have ever seen of the ordinary form, between which two nearly all the Portland specimens are intermediate. This moth used to be considered very rare, and the Rev. O. P. Cambridge and others have spent hours in getting one or two specimens in searching by day; now with the aid of a big lamp at night one may take 80 in an evening.

There are only one or two other interesting and curious facts amongst the moths at Portland to which I propose to allude.

One of the most generally distributed insects which is, I believe, common in all parts of England and of which Mr. Stainton says (in Nat. Hist. Tineina, vol. i., p. 60) that "it probably occurs wherever roses grow," is *Nepticula anomalella*. The larva of this species makes a long serpentine mine in a rose leaf, and when full fed quits its mine and spins a brown cocoon. The moth has greyish violet wings without the least trace of any bar across them.

One of the most curious facts in connection with this genus is that another species, *Nepticula centifoliella*, exists, whose larva is indistinguishable from that of *N. anomalella*; the larva makes a very similar mine in a rose leaf and spins a similar brown cocoon. But when the perfect insect emerges it is strikingly different, as the fore-wing is crossed near the middle by a bright silvery bar and there are also other smaller differences. This latter species has been found at one or two places in England, but not in any numbers, and always, I believe, in company with *N. anomalella*, so that one may collect a great many larvæ of the two species, and breed one or two *N. centifoliella* and dozens of *N. anomalella*. It is generally considered one of the rarest of the genus *Nepticula*.

I have been much surprised, therefore, to find that at Portland one gets on the rose bushes in the locality where it occurs nothing but the usually rare species *N. centifoliella*, whereas as far as I have seen *N. anomalella* is entirely absent from the island. It is not improbable, however, that it may occur in gardens on rose trees which have been brought from other parts of the country, as it is generally common on garden roses. *N. centifoliella* has not been found elsewhere in this county, though *N. anomalella* is abundant.

I have no distinct theory to offer on this point, but it certainly shews, in conjunction with other facts, that something very peculiar influences the insect fauna of Portland. *N. centifoliella* is figured on the moth plate in the last volume of our "Proceedings."

With this very remarkable case of these two moths, which belong to the smallest known group, and of which one wing only measures a tenth of an inch in length, and sometimes less, I will close my list of the chief peculiarities in the moths of Portland. There are many others of a similar nature, but, perhaps, not quite so marked, which might be mentioned; but enough have been brought forward to lead us to the conviction either that Portland and the mainland have had no communication with each other for a very long period, or that there is something very unusual in the climate or general conditions of life on Portland which enables moths which can exist either not at all or only with difficulty in

any other part of this country to live and multiply, and the converse, and which, in the case of other species, alters their nature and makes them vary.

It would be unsafe to draw any definite conclusion without hearing first what our naturalists in other branches have to say about the Portland fauna and flora, and what our meteorologists think of the climate.

If they find these subjects half so interesting as I have found, and continue to find, the moths, I do not think that they will have any cause to be disappointed at the result of their study.

Since writing the above paper I have had the pleasure of hearing from Mr. H. T. Stainton that he considers a species of *Gelechia* which I had thought might be distinct, and had sent for his opinion, new to science. This will add another species, in addition to *Epischnia Bankesiella*, which Portland can, so far, claim as entirely its own. It is not a common species there, and very local in its distribution. I have named this species *Gelechia Portlandicella*, and a description will be found elsewhere in this volume.





On a case of apparent
Substitution of a Wing for a Leg in a Moth
(*Zygæna filipendulæ*.)

By N. M. RICHARDSON, B.A.



IN the summer of 1877 I collected from a chalk-pit near Cambridge about 700 pupæ of *Zygæna filipendulæ*, in order to breed the yellow variety of that species which occurred there. I bred a few (5 or 6 as far as I can remember) yellow ones, and also one specimen with 5 wings and only 5 legs: the left hind-leg is absent, its place being occupied by a fifth wing. This specimen is a male of the ordinary red colour, of medium size (1" 3½" in expanse of wings), with the ordinary markings, and perfectly developed; in fact, there is nothing at all unusual about it except the extraordinary peculiarity above mentioned. The extra wing resembles an ordinary hind-wing of this species in shape and appearance, but is much smaller. It is 3" in length and 2" in breadth, whereas the hind-wing of this specimen is 4½" long by 2½" broad. The extra wing is much more thinly clothed with scales than the others, being most covered near the base. On the posterior margin of the basal half there is a distinct blackish border corresponding to that on the hind-wing. There is also a slight blackish border on the basal half of the under side of the

anterior margin. The outer half of the wing has very few scales, and these are mostly of a pale brickdust or brownish-red colour, some being quite colourless and transparent, so that the wing is red at the base and shades off gradually into a faint brownish-red colour near the tip. The fringe on this outer half is of the colour of the adjacent part of the wing, but with a tinge of grey. The neuration of the extra wing does not appear to be abnormal, but resembles that of the hind-wing. This wing is attached to the body along the line in which the first joint of the leg would lie if present, and by a junction of rather more than 1" in length; it would, therefore, probably, have been quite immoveable when the insect was alive. It has one or two slight longitudinal folds, but is not in any way deformed. The wing is inclined to the horizontal at an angle of about 30°, and points downwards and backwards, making an angle of about 45° with the body. There was not much variety, except in size (1" 1" to 1" 7") amongst the red specimens, and I think that I bred very few cripples from the pupæ I collected.

I have called this case of monstrosity "The apparent substitution of a wing for a leg," and I may here state that I have examined this specimen carefully, several times, with a magnifying glass and microscope, and have been quite unable to see any trace of the sixth leg or anything that could represent it. Had it been present externally, even though very small, I think I must have seen it. It has also been seen and examined amongst others by three Fellows of the Royal Society—the Rev. O. P. Cambridge and Messrs. R. McLachlan and H. T. Stainton—who will all, I believe, endorse what I say. I bred the moth myself, and set it carefully upside down, so as to show the extra wing, and set out the legs. The specimen has been in my possession ever since. Beyond this I can see no trace whatever of a leg having been broken off, and feel satisfied that nothing of the sort has taken place. I am particular in giving these details, as they will answer questions which would be likely to occur to those who read the description of this moth.

It may not be known to some of those present, as was the case with myself when I first described this specimen in the *Ent. Monthly Mag.* (vol. xxv., p. 289), how exceedingly rare it is, apparently, indeed, an unknown thing to find one organ or limb substituted for another in the animal kingdom, and it therefore behoves those who come across such an instance to be very careful how they record it.

The coloured drawing which Mrs. Richardson has made of this moth, which is represented on the accompanying plate, was shewn by Mr. McLachlan at a meeting of the Entom. Soc. of London lately, and he tells me that it excited great interest, and that no one had heard of such an anomaly. I have since heard from a correspondent who was present on the occasion that it was considered so extraordinary that many thought there must have been a mistake made. It is by no means the first time that this simple explanation has been offered as the solution of a difficulty which was not easily to be understood; but, fortunately, my specimen is in existence, though, being such a precious article, I do not like trusting it to the post.

I have had some very interesting correspondence with Professor Windle, of Queen's College, Birmingham, a student of teratology (or the science of monstrosities), but amongst the vertebrates only. He tells me that he does not know of much teratological work having been done on invertebrates. He says "Amongst vertebrates the presence of an additional limb, or pair of limbs, is not amongst the great rarities of teratology. Especially it is common amongst fowls, and then concerning the pelvic limbs. It has even been observed in the frog." "These additional limbs, however, are always of the same nature as the adjacent limb, except in cases of marked duplicity. Thus there may be a hand or arm projecting from a sacral tumour near the thigh. Here, however, we have to deal with a different state of affairs, since the tumour and limb represent the ill-developed second half of a double monster. I fancy a leg may be found adjacent to the upper extremities under similar conditions."

I will now proceed to those cases in which an extra wing exists in an insect, but the usual 4 wings and 6 legs are all present. Such cases have been occasionally recorded, and are well known and authenticated, though not common. I have never myself met with one. I have four of these instances to mention, which are all upon which I have up to the present time been able to get information.

The first three are described fully in Transactions Entom. Soc. of London, 1879, p. 219, in a paper "On some Unusual Monstrous Insects," by Professor Westwood.

The first of these is a specimen of the common brimstone butterfly (*Gonepteryx rhamni*), in which the right-hand hind-wing is double, the fifth or extra wing being affixed at the base of the true wing, which is scarcely more than two-thirds of the natural size, the extra wing being still smaller. Both the right hind-wings are somewhat abnormal in their veining. There were only 5 legs on this specimen, but Prof. Westwood was unable to examine it so as to see if one had been broken off.

The second case is a specimen of a small tortoise-shell butterfly (*Vanessa urticae*). Here the right hind-wing is also double, but the extra wing is much less developed than that of the *G. rhamni*. The true hind-wing is smaller than the normal size. The supplemental wing is, in both these cases, affixed at the base of the costal portion of the right hind-wing, but here it is implanted upon the upper side of the wing, and in the specimen of *G. rhamni* on the under side.

In the third case mentioned by Prof. Westwood, that of a male specimen of the common meadow brown butterfly (*Hipparchia Janira*), a narrow longitudinal strip is, as it were, let in in the middle of the left hind-wing, which, were it not for this strip, which appears from its orange colour and eyelet marking to be a portion of a fore-wing of a male of this species, would be somewhat smaller than the right hind-wing.

The fourth case is that of a specimen of *Saturnia pavonia*, in the possession of Mr. P. B. Mason, of Burton-on-Trent, who has

kindly given me some particulars regarding it. He says "In this, as is usual, the supplementary wing is between the others, and partakes of the characters both of the fore and hind-wings; this and the hind-wing are about equal in size and are rather smaller than the hind-wing on the other side."

Mr. Mason also informs me that he possesses several examples of the duplication of an organ in beetles, amongst which is a specimen of *Chrysomela menthastri*, with three perfect tarsi on one leg. This I should place in the same class of monstrosities as the cases I have mentioned of the duplication of a wing. Professor Westwood says, in his paper, that a considerable number of instances have occurred in insects of an extra number of legs, or antennæ, or of the joints of those organs, but that the duplication of a wing is very rare.

I will now proceed to consider, with the help of the evidence before me, in what respects this specimen of *Z. filipendulæ* differs from the other cases I have mentioned. It is a well known fact that supplementary limbs are not uncommon amongst vertebrates, and Professor Windle says that they are of the same nature as the adjacent limbs, except where portions of two distinct individuals are present, giving, as an instance of the latter, an arm projecting from a tumour near the thigh. It may not be strictly correct to assume that the same laws hold good as regards monstrosities in invertebrates, but still I think that we may look on the two as somewhat analogous, and, according to the above law, we may regard this fifth wing in my specimen of *Z. filipendulæ* as corresponding to the arm projecting from the tumour near the thigh in the vertebrate. Eggs containing two germs, or double-yolked eggs, are not at all unusual amongst fowls, and I have found them more than once in the case of the common earthworm, and though I am not aware that they have been recorded amongst insects, still I see no reason why they should not occur. There is little doubt that a double monster cannot be produced except from one of these eggs, though, as a rule, two distinct and separate individuals would be formed, as has been the case with the double worm's

eggs that I have met with. It would seem from the few cases of which I have any knowledge that the junction of the two individuals composing the monster may take place in all kinds of ways, and that a large portion of one, or both, may be dwarfed or undeveloped, so that both individuals may be perfect, as in the case of the Siamese twins, who were merely joined by a band near the waist; both may be imperfect, as in the Two-headed Nightingale, which was, I believe, double above the waist and single below; or one individual may be perfect and the other represented by only a small portion of its body, as in the case of a form which Professor Windle mentioned to me, and which is happily very rare, of a perfect human being with a second head placed upside down on top of the normal head, and also in the case mentioned above of a hand or arm projecting from a sacral tumour. Amongst quadrupeds I met with a case of a pig with a second head projecting from the upper part of the true head. It had 4 eyes and 4 ears, but only one body and 4 legs. It lived for a few days; but I did not hear of it until it was dead and buried in a manure heap, and when its body came to be looked for it could not be found, having been probably eaten by dogs or pigs which were in the same yard, so that I was unfortunately unable to secure the specimen. It was born at a publichouse in Chickerell parish, within half-a-mile of my house, and was seen by many persons whom I know. Professor Windle has not met with a similar instance, but he tells me that the case of two heads side by side on one body (*diprosopus*) is well known, also of one snout placed just above the other, or normal snout, with only one eye, and that placed in the middle at the front part of the junction of the two snouts (*Cyclopia*).

Now, the existence of the fifth wing in my specimen can be explained, either by assuming that it forms the only developed part of a second individual, the moth being the produce of a double egg, which would be the case if we follow Professor Windle's law for vertebrates, or we may put it in the same class as the five-winged moths that I have mentioned, where the extra wing is implanted

on the normal one. There is very little evidence on which to decide this question, but I incline to the former view, for two reasons, the first of which is the analogous cases in vertebrate animals. With regard to my second reason, it may be noticed in Professor Westwood's two cases of an extra wing that the fifth wing is very abnormal in its veining, some of the veins being absent altogether; this, together with the fact that the wings proceed from one base, rather suggests the idea of some sort of abnormal growth connected with the wing itself, such as the double legs of vertebrates; whereas the fifth wing of my *Z. filipendulæ* is almost, if not quite, normal in the veining, and in all respects, except size and colour, like a normal hind-wing of the species. (See plate for neuration of wing.) Size is not an important matter in the wing of an insect, as the wings are very small on emergence from the pupa, and, if interfered with at this period, are often arrested in their growth or crippled. Colour depends only on the number and colour of the scales, but the veining is more a matter of structure, and, therefore, much more worthy of consideration. It seems to me, therefore, that as this is a more perfect wing than the supplementary wings in the other cases, and as it is not placed on, or near a normal wing, there is good reason for regarding the moth as a double monster of which only one wing is developed in one individual, the other individual being fully developed with the exception of one hind-leg.

There is one point in which the present case of monstrosity differs from the case of a hand or arm projecting from a sacral tumour, and that is in the apparently complete absence of the left hind-leg in the moth. I do not myself regard this as a great difficulty, for two reasons. In the first place it is not infrequently the case that a wing is completely absent in a moth, which certainly does not often take place with the leg of an animal. I may mention *Macaria notata*, in which a hind wing is sometimes absent, and a specimen of *Dicrorampha simpliciana* bred by me lately, in which the right hind-wing is absent, its place being filled by a very small shapeless lump, which bears no resemblance to an un-

developed wing. The absence of a leg in a moth would probably escape observation, and I cannot say whether it has been recorded or not.

It may be noticed that the normal wing adjacent to the fifth wing in the four other cases of monstrosity that I have mentioned is more or less reduced in size, and, indeed, one would expect that the large abnormal growth would absorb some of the nourishment required for the parts nearest to it, just as one bud on a shoot will sometimes grow at the expense of the rest ; consequently, I should not expect to find in my specimen more than a very small leg, or some deformed object representing one, and I do not think that it is very surprising that there is nothing at all visible, considering that the wing is so accurately placed where the leg should come. It would have been most interesting to have known what the left hind-leg of the larva was like, as I believe that it has been established that there is a connection between the true legs in the larva and the legs in the imago. (Ent. Mon. Mag. xvi., 96.) It is unfortunate that we have only this one specimen to work upon, for though we may no doubt learn much from what is known about the vertebrata, yet one would like to be able to study a few double monsters in the invertebrate kingdom. There are special difficulties in connection with this subject amongst insects, as from their frequent changes of skin in the larva stage and their complicated transformations it is highly improbable that a double monster would accomplish satisfactorily its first change of skin, or, at all events, its change from the larva to the pupa stage. It is, therefore, likely that such cases would be extremely rare in the imago, though they might occur oftener in the young larva, in which they would not have the same chance of being noticed.

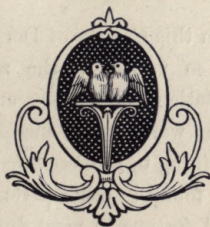
In the present case, whatever represented the extra wing in the larva would be likely to be so small and of such a shape and nature as not to interfere with its successive changes of skin or transformations, so that it would pass through them, as it has done in this instance, successfully, which might not have

happened had a larger portion of a second individual been developed.

There is a third explanation, which was the first that suggested itself to my mind, but which, upon consideration, I rejected as having absolutely no support from any other known case in the animal kingdom. This is, that a substitution of a wing for the normal leg has taken place; that is to say, that that portion of the embryo or larva which represents the left hind-leg in the perfect insect, and which has in every other known instance grown or developed into a leg, has not done so in this case, but has, by some means or other, become a wing. The chief, and indeed as far as I see, only support of this theory is, that in plants petals very frequently take the place of the stamens and pistil, as we see in the case of double flowers. We often find stamens with the lower part very broad and flat and the anther much diminished in size, and all intermediate stages of development will occur on the same plant, and, indeed, in the same flower, between the perfect stamen and the perfect petal. But this kind of transformation is, so far as I am aware, quite unknown in the animal kingdom, which seems consistent with the far superior organisation of a leg or wing to a stamen or petal, and when the apparent substitution can be explained by a theory which is quite consistent with what is known to occur amongst animals, and is founded on other cases of monstrosity among them, I think it is wiser to adopt it, and not to go for our parallel cases to plants, which are so totally different in their nature and mode of growth.

Even the change from stamen to petal in a plant is not, it seems to me, a real case of substitution, as I am not aware that it has been proved that the stamen in its earliest distinct stage, or embryo stamen, if I may so call it, will grow into anything but a stamen, or the embryo of the intermediate stamen-petal into anything else but a stamen-petal; but it seems to me more likely that the embryo is formed by the growth of the plant, and that that organ of which the embryo is produced will be subsequently developed, and no other.

The subject is a very difficult and extensive one, and demands much study and investigation, and especially more facts. I hope that the ensuing season may bring to light some cases of insect monstrosities, and I think that if worms' eggs were collected in numbers some of them might produce interesting results.





Descriptions of Two Species of Lepidoptera

(*Gelechia Portlandicella* and *Nepticula auromarginella*)

FROM DORSET, NEW TO SCIENCE.

By N. M. RICHARDSON, B.A.



VEN in this County of Dorset, so rich in insect life and so varied in the nature of its soil and vegetation, one would scarcely have expected that there were many species of lepidoptera still remaining to be discovered which had not already been found in other parts of the world. I have, however, had the good fortune to meet during the past year with two species which do not appear to have been previously noticed elsewhere, and which I therefore describe as new to science.

In June, 1888, I took at Portland two specimens of a *Gelechia*, which I could not satisfactorily refer to any known species, though it seemed to have affinities with both *umbrosella* and *mundella*. In 1889 I took a few more specimens, and as I was not satisfied to place them with either of the above two species, and could not refer them to anything else, I sent five of them to Mr. H. T. Stainton for his opinion upon them. He says:—"I think the five certainly indicate a good species, nearer to *mundella* than to *umbrosella*. I am not aware that I ever saw it before."

This species seems to be decidedly rare at Portland, as, though I worked for it in the only locality where it occurs, which is rather limited in area, I only succeeded in getting altogether eight specimens this year.

It may be described as follows:—Exp. al., $4\frac{3}{4}$ — $5\frac{1}{4}$ ". Ground colour of fore-wing pale putty colour, generally much sprinkled with dark grey scales, especially towards the inner and hind margins; a narrow blackish line crosses the wing close to the base and is immediately followed by a blackish spot; the three usual spots are black, and there is sometimes a small blackish indistinct spot on the inner margin at the inner edge of the pale fascia: this fascia is of the ground colour without any dark scales, very distinct, thinnest in the middle, and consists of two opposite spots, which are sometimes joined, but more often very slightly separated from each other by a few dark scales; it is placed three-fourths of the way from the base to the tip of the wing. Fringes like the rest of the wing. Hind-wing pale fuscous, a little darker at the apex; face and palpi very pale ochreous, except the last joint of the palpi, which is marked with grey towards the tip; eyes black; antennæ black, with small indistinct pale rings; head and thorax like the fore-wings; body like the hind-wings, except that the tip is pale ochreous; legs pale putty-coloured, ringed with grey.

This species resembles *umbrosella* in the shape of the wings and pale fascia, but the black colour of the latter with its beautiful purple gloss at once separates the two species. *Mundella* appears to have broader and more sharply pointed wings than either this species or *umbrosella*; but I think that this is partly due to the fact that the darker colour of the fringe in most specimens of *mundella* causes the wing itself to stand out strikingly and appear shorter than it is when compared with that of *umbrosella*. The tip of *umbrosella* also appears to be more rounded, owing to the difficulty of seeing where the fringe begins, the fringe itself being rounded on the outside margin. *Mundella* is, so far as my experience goes, quite destitute of a pale fascia, which serves to

distinguish it from the new species, in which the pale fascia is distinct and striking. (Mr. Stainton says, in answer to my enquiry on this point:—"Amongst my *mundella* is one which just shews a ghost of the pale hinder fascia, but in all my other specimens the absence of the fascia is a striking character.") It also wants the neat clean look of *mundella*, owing to the presence and irregular distribution of so many dark scales. I propose to call this species *Portlandicella*, from the locality in which it was found.

I now proceed to the other new species belonging to the genus *Nepticula*, which contains some of the smallest known moths.

On the 22nd of October, 1888, I collected some *Nepticula* larvæ mining in bramble leaves, and was much surprised to find that three moths, which made their appearance on November 24th and December 7th and 19th respectively of the same year, though somewhat resembling *aurella*, had, besides the usual golden fascia, a second one of the same colour situated on the hind margin of the fore-wing. I do not remember that I bred any other imagines from this batch of larvæ, but from others there emerged one of these peculiarly marked specimens on February 12th, and seven during May, 1889. I bred one more on September 30th, 1889, and a few in the latter part of January, 1890. Those of which I know the locality all came from near Weymouth.

I mentioned this *Nepticula* to Mr. W. H. B. Fletcher, of Worthing, when staying with him last May, but though he has bred more *Nepticulæ* than most people he said that he had never seen this form from bramble. As I could not identify it with any known species, I sent some to Mr. Stainton, asking him for his opinion on them, which he kindly gave me in the following words—"The *Nepticula* from the bramble, with a gold line on the hind margin, is quite new to me. I have seen many *aurella*, both British and German, but I never saw anything like these." He also added that he thought, that with my series, I might safely describe the species as new. I have bred several more specimens this spring (1890).

I have not yet been able to differentiate the larva from that of *aurella* or other allied bramble species, such as *N. gei*, which occurs in bramble in the neighbourhood of Weymouth.

The following is a description of the new species, which I propose to call *auromarginella*, on account of the striking character which distinguishes it from all others of its genus :—

Exp. al. $2\frac{1}{4}$ "— $2\frac{3}{4}$ ". Fore-wing, greenish-bronze, becoming darker and more violet on the basal side of a somewhat broad, nearly straight, pale golden fascia, which crosses the wing a little beyond the middle; on the extreme hind-margin is a similar, narrower, crescent-shaped, pale golden fascia; the space between the fasciæ is dark violet, the whole of the wing being beautifully metallic; hind-wings and fringes, grey, with a bronzy gloss; head, any shade between ferruginous and very dark brown; eyecaps cream-coloured, or pale ochreous; thorax, like the basal half of fore-wing; antennæ, body, and legs darker, the legs with light rings.

This species cannot be confounded with any other on account of of its golden hind-margin. It resembles *aurella* in some respects, but is smaller, and the basal portion is not brown as in that species, but rather bronze green.

I exhibit also a drawing of a specimen of *Chrysoclista bimaculella*, Haw., taken by me on June 13th, 1889, near Weymouth, in a lane with hedges of sallow, willow, and other growth. This moth is always looked upon as a great rarity everywhere; the only other records for this county are contained in Mr. C. W. Dale's "List of the Lepidoptera of Dorsetshire," being of three specimens, taken at Glanvilles Wootton, in June, 1874. (See plate.) (See Ent. Mon. Mag. xxv., 169.)

I have also to mention *Coccyx subsequana*, Haw., a local and scarce species in this country, of which I took several specimens in May, 1889, near Weymouth. (See plate.)





Some Romano-British Relics found at Max Gate, Dorchester.

(Read at the Dorchester Meeting, 1884; omitted from the volume
of that date.)

By Mr. THOMAS HARDY.



HAVE been asked to give an account of a few relics of antiquity lately uncovered in digging the foundations of a house at Max Gate, in Fordington Field. But, as the subject of archæology is one to a great extent foreign to my experience, my sole right to speak upon it at all, in the presence of the professed antiquarians around, lies in the fact that I am one of the only two persons who saw most of the remains *in situ*, just as they were laid bare, and before they were lifted up from their rest of, I suppose, fifteen hundred years. Such brief notes as I have made can be given in a few words. Leaving the town by the south-eastern or Wareham Road we come first, as I need hardly observe, to the site of the presumably great Romano-British cemetery upon Fordington Hill. Proceeding along this road to a further distance of half-a-mile, we reach the spot on which the relics lay. It is about fifty yards back from the roadside, and practically a level, bearing no immediate evidence that the natural contour of the surface has ever been disturbed more deeply than by the plough. But though no barrow or other eminence rises there

it should, perhaps, be remarked that about three hundred yards due east from the spot stands the fine and commanding tumulus called Conquer Barrow (the name of which, by the way, seems to be a corruption of some earlier word). On this comparatively level ground we discovered, about three feet below the surface, three human skeletons in separate and distinct graves. Each grave was, as nearly as possible, an ellipse in plan, about 4ft. long and $2\frac{1}{2}$ ft. wide, cut vertically into the solid chalk. The remains bore marks of careful interment. In two of the graves, and, I believe, in the third, a body lay on its right side, the knees being drawn up to the chest, and the arms extended straight downwards, so that the hands rested against the ankles. Each body was fitted with, one may almost say, perfect accuracy into the oval hole, the crown of the head touching the maiden chalk at one end and the toes at the other, the tight-fitting situation being strongly suggestive of the chicken in the egg shell. The closest examination failed to detect any enclosure for the remains, and the natural inference was that, save their possible cerements, they were deposited bare in the earth. On the head of one of these, between the top of the forehead and the crown, rested a fibula or clasp of bronze and iron, the front having apparently been gilt. This is, I believe, a somewhat unusual position for this kind of fastening, which seemed to have sustained a fillet for the hair.

In the second grave a similar one was found, but as it was taken away without my knowledge I am unable to give its exact position when unearthed. In the third grave nothing of the sort was discovered after a careful search.

In the first grave a bottle of white clay, nearly globular, with a handle, stood close to the breast of the skeleton, the interior being stained as if by some dark liquid. The bottle, unfortunately, fell into fragments on attempting to remove it. In the same cavity, touching the shin bones of the occupant, were two urns of the material known as grey ware, and of a design commonly supposed to be characteristic of Roman work of the third or fourth century. It is somewhat remarkable that beside them was half, and only a

half, a third urn, with a filmy substance like black cobweb adhering to the inner surface.

In the second cavity were four urns, standing nearly upright like the others, two being of ordinary size, and two quite small. They stood touching each other, and close to the breast of the skeleton; these, like the former, were empty, except of the chalk which had settled into them by lapse of time; moreover, the unstained white chalk being in immediate contact with the inner surface of the vessels was nearly a proof that nothing solid had originally intervened. In the third grave two other urns of like description were disclosed.

Two yards south from these graves a circular hole in the native chalk was uncovered, measuring about two feet in diameter and five feet deep. At the bottom was a small flagstone; above this was the horn, apparently of a bull, together with teeth and bones of the same animal. The horn was stumpy and curved, altogether much after the modern shorthorn type, and it has been conjectured that the remains were possibly those of the wild ox formerly inhabiting this island. Pieces of a black bituminous substance were mixed in with these, and also numerous flints, forming a packing to the whole. A few pieces of tile, and brick of the thin Roman kind, with some fragments of iridescent glass were also found about the spot.

There was naturally no systematic orientation in the interments—the head in one case being westward, in the other eastward, and in the third, I believe, south-west. It should be mentioned that the surface soil has been cleared away to a distance extending 50ft. south and west from where these remains were disinterred; but no further graves or cavities have been uncovered—the natural chalk lying level and compact—which seems to signify that the site was no portion of a regular Golgotha, but an isolated resting-place reserved to a family, set, or staff; such outlying tombs having been common along the roadsides near towns in those far-off days—a humble Colonial imitation, possibly, of the system of sepulture along the Appian Way.

In spite of the numerous vestiges that have been discovered from time to time of the Roman city which formerly stood on the site of modern Dorchester, and which are still being unearthed daily by our local Schliemann, one is struck with the fact that little has been done towards piecing together and reconstructing these evidences into an unmutilated whole—such as has been done, for instance, with the evidences of Pompeian life—a whole which should represent Dorchester in particular and not merely the general character of a Roman station in this country—composing a true picture by which the uninformed could mentally realise the ancient scene with some completeness.

It would be a worthy attempt to rehabilitate, on paper, the living Durnovaria of fourteen or fifteen hundred years ago—as it actually appeared to the eyes of the then Dorchester men and women, under the rays of the same morning and evening sun which rises and sets over it now. Standing, for instance, on the elevated ground near where the South-Western Station is at present, or at the top of Slyer's Lane, or at any other commanding point, we may ask what kind of object did Dorchester then form in the summer landscape as viewed from such a point; where stood the large buildings, were they small, how did the roofs group themselves, what were the gardens like, if any, what social character had the streets, what were the customary noises, what sort of exterior was exhibited by these hybrid Romano-British people, apart from the soldiery? Were the passengers up and down the ways few in number, or did they ever form a busy throng such as we now see on a market day? These are merely the curious questions of an outsider to initiated students of the period. When we consider the vagueness of our mental answers to such inquiries as the above, we perceive that much is still left of this fascinating investigation which may well occupy the attention of the Club in future days.





Purbeck Wild Flowers in December.

By EUSTACE R. BANKES, M.A., F.E.S.



IT would probably be almost an insult to the feelings of every one to refer to the miserable apology for a summer to which we were treated in 1888 ; but certainly no less remarkable, though decidedly more enjoyable, than that almost unprecedented period of continuous rain, were the exceptionally mild autumn and winter which brought the year to a close. Few indeed, if any, of us will need to be reminded of the wonderful variety of plants which were still in bloom and adorned our gardens throughout November and December ; but to those who had the chance of observing them the profusion of wild flowers which brightened up the fields and hedgerows during those months was even more astonishing, and furnished a striking proof—if proof had been wanting—of the excessive mildness of the weather and the almost entire absence of frost at night. This sudden contrast to the very low temperature which had prevailed up till that time was the more unexpected from the fact that, even at Greenwich, frost was registered on every single night during the first three weeks of October ! But at length the long spell of cold came to an end, the last week in October being a little more than 6 degrees in excess of the average, and the improvement was continued throughout November and the earlier part of December.

The temperature returns for London shewed a mean for November of $47\frac{1}{2}^{\circ}$, F., or $3\cdot7^{\circ}$ above the average of 15 years, 4° above that of 46 years, and $5\cdot1^{\circ}$ above that of 116 years; but a still more remarkable feature was that the thermometer 4ft. above the ground never once fell below the freezing-point throughout the month, and only once reached that point! The beginning of December was equally warm, and, as an illustration, it may be mentioned that over a third of the country the thermometer did not fall below 50° on the night of the 4th; while the day temperatures on the 5th ranged from 50° to 54° , London, with a temperature of 53° , being 4° warmer than Biarritz, 11° warmer than Nice, and 19° warmer than Paris! The principal cause of this mildness was to be found in the continuous succession of cyclonic disturbances which came to us from the Atlantic Ocean, bringing with them a warm damp atmosphere; and its effect on vegetation was twofold, for not only did the absence of frost allow many of the summer and autumn flowering plants to continue to open their petals, but the high temperature which prevailed for week after week forced on—as though in a hothouse—many of our spring flowers, and made them come into bloom several months before their time. This will account for the peculiarly mixed variety of species found side by side, which, in the ordinary course of events, are never associated together. As an instance of this we may mention that such summer flowers as the Red Poppy, Corn Marigold, Foxglove, and the several species of heath were in bloom at the same time as the autumn-flowering ivy, and such peculiarly spring plants as the Lesser Celandine, the Dog Violet, and the Primrose.

Although such an unexpected sight in December was most welcome to a lover of Nature, yet the highly injurious effects caused to the plants themselves, which were thus forced into unwonted activity at such a season of the year, will be readily understood, and were clearly noticeable in the following spring and summer. Instead of being able to recruit their energies during the winter months, as in the natural course of events, many plants were

allowed no sufficient period of repose, the result being that, when the proper time again arrived for them to burst forth into fresh bloom, they had not the full amount of strength required for the effort, and, consequently, only came into flower very late, and in a comparatively feeble and half-hearted sort of way.

Thinking that it would be of great interest to take advantage of such an exceptional state of things in the middle of an English winter, the Rev. Lester Lester, of Langton Matravers, the Rev. Owen L. Mansel, of Church Knowle, and the writer of this paper agreed to make separate lists of all the strictly wild flowers which they happened to notice within the limits of the Isle of Purbeck during the first fortnight of December; and the following catalogue embodies the result of their combined observations. It must be here stated that our researches were not carried on at all systematically, or no doubt many more plants might have been added; but we simply noted down those that we happened to meet with, and a large proportion of the species for which I am responsible were gathered, or noticed, while I was engaged in shooting. However, in spite of this, the list has assumed very respectable proportions, and when it is found that it comprises 105 different species of wild flowers (exclusive of all grasses, ferns, and kindred orders) it will probably be admitted that such a record is almost unprecedented for the time of year. There is little doubt but that a few additional names might have been inserted; but, unfortunately, owing to an insufficient knowledge of botany to which I must plead guilty, and lack of spare time to work them out, a few puzzling species, which could not be satisfactorily determined had to be omitted.

In amalgamating the three separate lists it was, of course, found that a fair proportion were common to all three; but, of those species which were only noticed by *one* observer, Mr. Lester appears to have recorded 7, Mr. Owen Mansel 5, and I am responsible for exactly 40.

The following are the names of the wild flowers noticed or gathered:—

1. *Ranunculus Ficaria* (Lesser Celandine).
2. „ *repens* (Creeping Buttercup).
3. „ *acris* (Meadow Crowfoot).
4. „ *bulbosus* (Bulbous Buttercup).
5. *Papaver Rhœas* (Common Red Poppy).
6. *Nasturtium officinale* (Common Water-cress).
7. *Sisymbrium officinale* (Common Hedge Mustard).
8. *Brassica Sinapis* (Wild Mustard).
9. *Capsella bursa-pastoris* (Shepherd's Purse).
10. *Viola canina* (Dog Violet).
11. *Polygala vulgaris* (Common Milkwort).
12. *Silene maritima* (Sea Campion).
13. *Lychnis vespertina* (Evening Campion).
14. „ *diurna* (Red Campion).
15. *Arenaria trinervis* (Three-nerved Sandwort).
16. *Cerastium vulgatum* (Broad-leaved Mouse-ear Chickweed).
17. *Cerastium viscosum* (Viscid Mouse-ear Chickweed).
18. *Stellaria media* (Chickweed).
19. „ *graminea* (Lesser Stitchwort).
20. *Linum catharticum* (Little Flax).
21. *Malva rotundifolia* (Dwarf Mallow).
22. *Geranium Robertianum* (Herb Robert).
23. „ *molle* (Dove's-foot Crane's-bill).
24. „ *dissectum* (Jagged Crane's-bill).
25. „ *columbinum* (Long-stalked Crane's-bill).
26. *Ulex Europæus* (Common Furze).
27. „ *nanus* (Dwarf Furze).
28. *Trifolium repens* (White Clover).
29. „ *pratense* (Purple Clover).
30. „ *procumbeus* (Hop Clover).
31. „ *minus* (Lesser Yellow Clover).
32. „ *filiforme* (Lesser Yellow Trefoil).
33. *Onyrbrychis sativa* (Common Vetch or Sainfoin).
34. *Vicia sepium* (Bush Vetch).
35. *Geum urbanum* (Common Avens).

36. *Fragaria vesca* (Wood Strawberry), and *one ripe fruit*.
37. *Potentilla reptans* (Creeping Cinquefoil).
38. „ *tormentilla* (Common Tormantil).
39. *Rubus fruticosus* (Common Bramble or Blackberry).
40. *Chærophylum temulum* (Rough Chervil).
41. *Daucus Carota* (Wild Carrot).
42. *Anthriscus vulgaris* (Common Beaked Parsley).
43. „ *sylvestris* (Wild Beaked Parsley).
44. *Caucalis Anthriscus* (Upright Hedge Parsley).
45. *Hedera Helix* (Common Ivy).
46. *Galium Aparine* (Cleavers).
47. *Sherardia arvensis* (Field Madder).
48. *Scabiosa succisa* (Devil's-bit Scabious).
49. *Erigeron acris* (Common Erigeron).
50. *Solidago virgaurea* (Golden-rod).
51. *Bellis perennis* (Daisy).
52. *Chrysanthemum Leucanthemum* (Ox-eye Daisy).
53. „ *segetum* (Corn Marigold).
54. „ *maritimum* (Sea Scentless Mayweed).
55. *Anthemis Cotula* (Stinking Camomile).
56. *Achillea millefolium* (Yarrow).
57. *Senecio vulgaris* (Common Groundsel).
58. „ *aquaticus* (Marsh Ragwort).
59. „ *Jacobæa* (Common Ragwort).
60. *Carduus nutans* (Musk Thistle).
61. „ *crispus* (Wetted Thistle).
62. „ *pycnocephalus* (Slender Thistle).
63. „ *lanceolatus* (Spear Thistle).
64. *Centaurea nigra* (Black Knapweed).
65. *Helminthia echinoides* (Bristly Ox-tongue).
66. *Leontodon hispidus* (Common Hawkbit).
67. „ *autumnalis* (Autumnal Hawkbit).
68. *Hypochoeris glabra* (Glabrous Hypochaere).
69. „ *radicata* (Long-rooted Cat's-ear).
70. *Sonchus oleraceus* (Common Sowthistle).

71. *Sonchus asper* (Prickly Sowthistle).
72. *Taraxacum Dens-leonis* (Common Dandelion).
73. *Crepis virens* (Smooth Hawk's-beard).
74. *Hieracium Pilosella* (Mouse-ear Hawkweed).
75. *Lapsana communis* (Common Nipplewort).
76. *Jasione montana* (Sheep's-bit).
77. *Campanula Trachelium* (Nettle-leaved Campanula).
78. *Erica Tetralix* (Cross-leaved Heath).
79. „ *ciliaris* (Ciliated Heath).
80. „ *cinerea* (Scotch Heath).
81. *Calluna vulgaris* (Common Ling).
82. *Primula vulgaris* (Common Primrose).
83. *Erythræa centaurium* (Common Centaury).
84. *Myosotis arvensis* (Field Mouse-ear).
85. *Lycopsis arvensis* (Small Bugloss).
86. *Borago officinalis* (Common Borage).
87. *Solanum nigrum* (Black Nightshade).
88. *Linaria Cymbalaria* (Ivy-leaved Toadflax).
89. *Digitalis purpurea* (Purple Foxglove).
90. *Veronica serpyllifolia* (Thyme-leaved Speedwell).
91. „ *Chamædrys* (Germander Speedwell).
92. „ *hederæfolia* (Ivy-leaved Speedwell).
93. „ *agrestis* (Procumbent „).
94. „ *Buxbaumii* (Buxbaum's „).
95. *Calamintha Clinopodium* (Wild Basil).
96. *Prunella vulgaris* (Self-heal).
97. *Stachys sylvatica* (Hedge Woundwort).
98. „ *arvensis* (Corn Woundwort).
99. *Lamium purpureum* (Purple Dead-nettle).
100. „ *album* (White „ „).
101. *Teucrium Scorodonia* (Wood-sage).
102. *Chenopodium album* (White Goosefoot).
103. *Euphorbia Peplus* (Petty Spurge).
104. *Mereurialis perennis* (Perennial Dog's Mercury).
105. *Anagallis arvensis* (Scarlet Pimpernel).

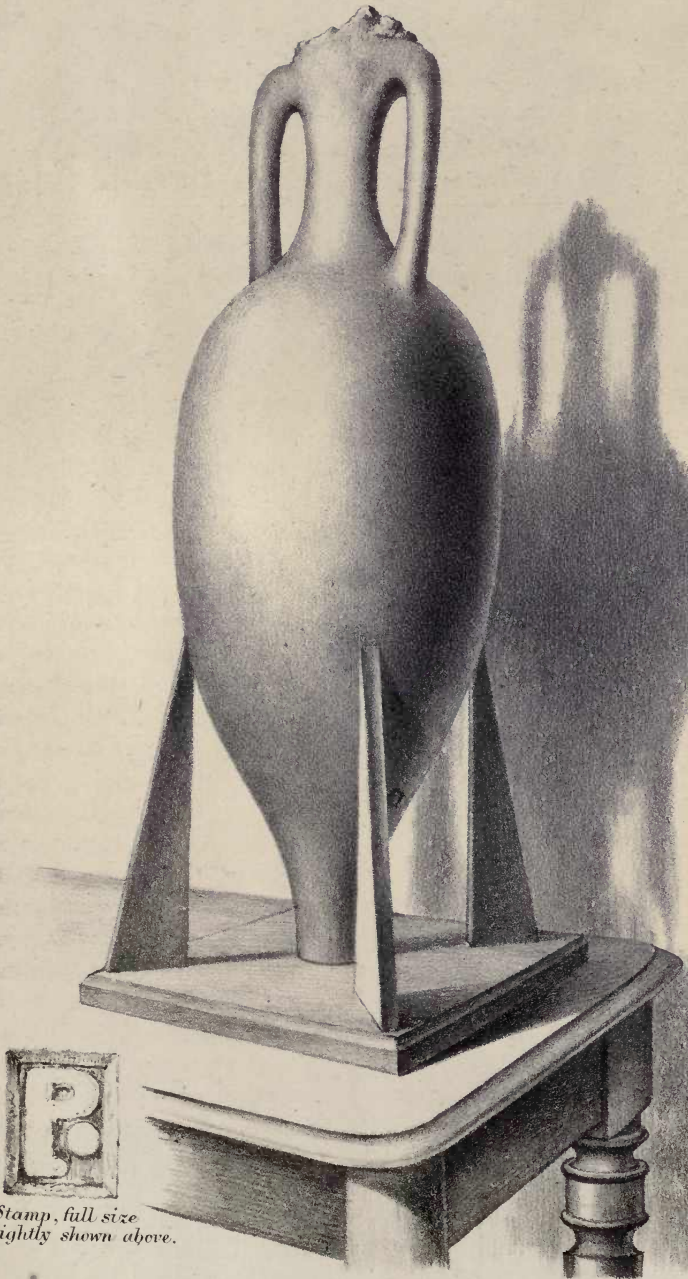


Roman Amphora or Wine Jar.

By ROBERT DAMON, F.G.S., &c.



AN example of this ancient vessel has lately been uncovered in the Weymouth Backwater, the outlet of the river Wey; the exact spot being mid-Channel and half way between the submarine tunnel of the gasworks and the dam, eight feet below the surface, in a deposit of dark sandy clay, which latter rests on hard blue clay (Oxfordian). Various utensils made from similar ware have been met with in or about the same spot, also other Roman remains in and adjacent to the village of Radipole, a mile or so distant, so that this discovery is additional evidence of the district being formerly one of Roman occupation. Stag horns are also of frequent occurrence throughout the Backwater up to the outlet of the "Wey," showing that the examples referred to have come from that direction rather than from the Harbour or Weymouth end. I may here incidentally mention that Roman remains are of rare occurrence in Melcombe, less rare in Weymouth proper, and numerous in the villages of Radipole and Preston. Amphoræ, such as the specimen before us, have been found at London, Gloucester, and other Romano-British sites, but so far as I can learn the example before us is the first recorded as having been found in Dorsetshire.



*Stamp, full size
slightly shown above.*

ROMAN AMPHORA - WEYMOUTH BACKWATER.

Mintern Bros. lith.

Though the Amphora has been generally replaced by more modern vessels, they are still in use in parts of Italy. Thus in Naples the ordinary pictorial sign of a wine and liquor or oil shop is that of an Amphora.

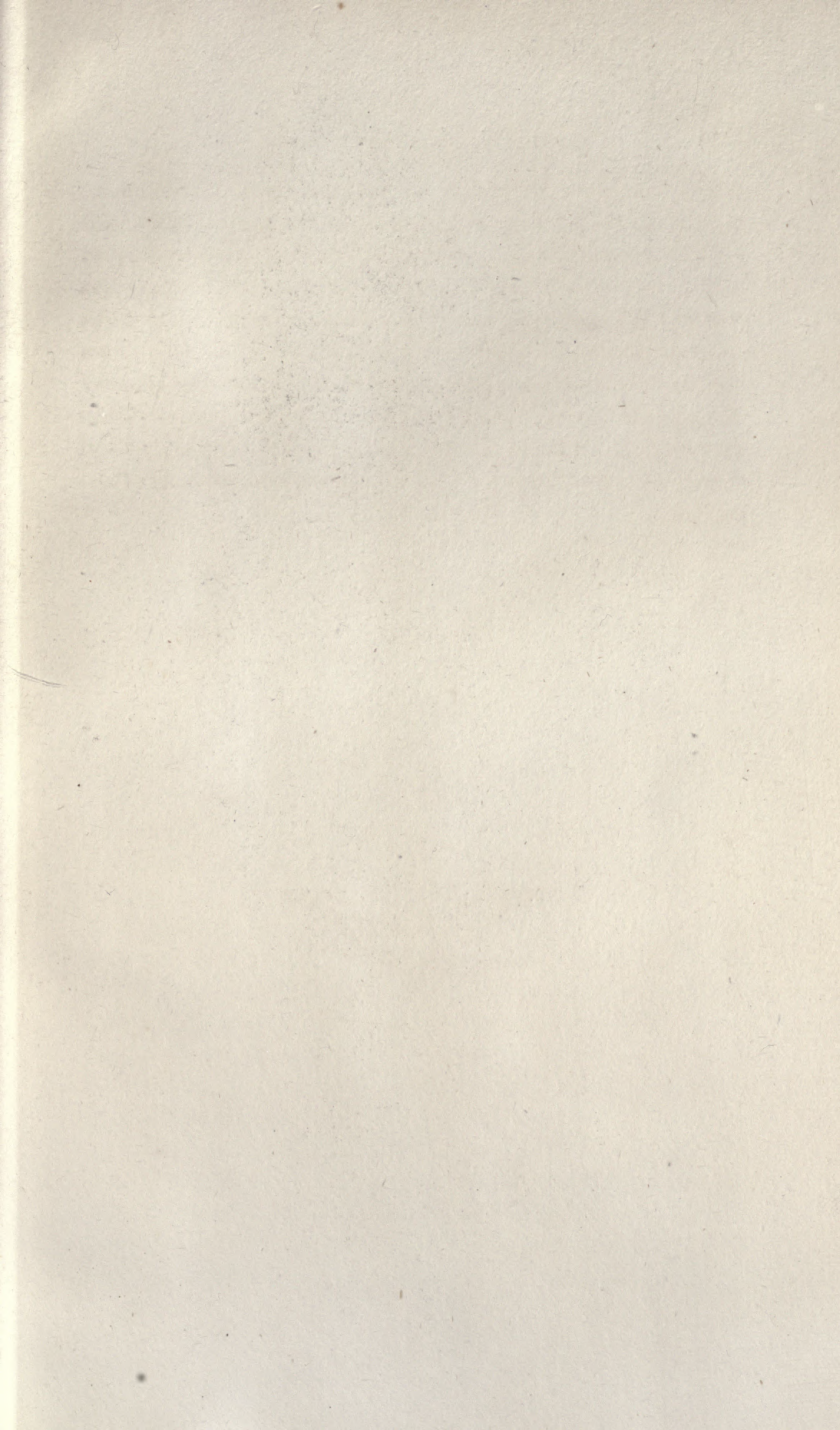
Those of my hearers who have visited Pompeii will probably remember the celebrated vault in the house of Diomed (so graphically described in "The Last Days of Pompeii"), where a row of these vessels stand almost erect in the sandy floor of the cellar. Its egg-shaped body and generally pointed base allow such an arrangement, though some specimens terminate with a boss to fit in a socket. This example, perfect except at the lip, is of pale terra cotta colour, and without lines or pattern. Long submergence might account for this as well as for the absence of other marks attesting the quality, quantity, and origin of its contents. It is known that some were so artistically decorative as to sell as works of art at high prices; such specimens may be seen at South Kensington.

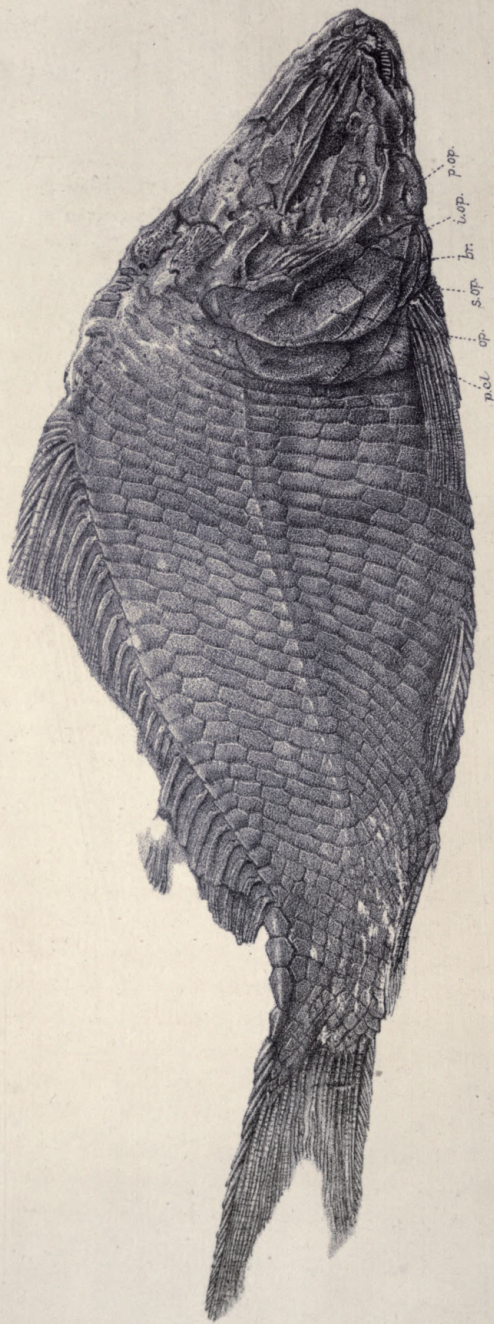
Amphoræ of moderate sizes were made on the wheel, but the larger, such as the one before us, were moulded by hand. As evidence of their general use Dr. Birch quotes from a Roman author, who records that upwards of 100 were found in the house of a Roman citizen.

The specimen before us measures in height 3 feet 7 inches; in greatest circumference 3 feet 4 inches. Its mouth when perfect was about $5\frac{1}{2}$ inches in diameter; its neck at its narrowest part is 2 inches internal diameter; its handles are quite perfect, and, reaching from the lip to the shoulder of the vessel, are 9 inches in length and of considerable strength; the stalk or pedestal is 2 inches in diameter at its extremity, gradually swelling up to the height of 18 inches, where it reaches the full circumference of the vessel. On the bottom slope of the Amphora there is an oblong depression containing the letter P and a square dot. This might be the manufacturer's mark or, more probably, the official seal of correctness (*probatum*?); for the Amphora was a measure of definite capacity—2 *urnæ*, or 5 gals. 6.08 pints. This example holds very

nearly 6 gals., so that we may conclude it to be of Roman origin. The Greek Amphora was half as large again—9 gals. Being used for storing wine, oil, honey, and other fluids it was necessary to coat them internally with some non-absorbent material. Pitch was the substance employed, and it is interesting to observe that this specimen shows clear evidence of the practice. There are patches of it observable on the inner surface of the vessel when properly illuminated; but the traces on the neck are unmistakeable. Moreover the material is still pitch unaltered in its physical characters, notwithstanding its long immersion of possibly fifteen centuries.







Berjeau & Highley del. et lith.

Histionotus angularis, Egerton.

West, Newman & Co. imp.



Histionotus Angularis.

By J. C. MANSEL-PLEYDELL, Esq.,
F.G.S., F.L.S.



ISHES are the first vertebrate animals provided with gills during the whole of life. Their form is adapted for moving in water with the least amount of resistance; their vertebræ, with few exceptions, are hollow at both ends, which substitute the notochord of the less developed forms.

The lowest type is the *Lancelet*, whose vertebral column is represented by a single notochord extending through the whole length of the body, the extremities similar without any enlargement at the anterior end, as in the higher developed form. They have only a membrano-cartilaginous skeleton without vertebræ, ribs, or jaws. The succeeding Order, including the Lampreys and Hag-fish, have no hard structure except their small horny teeth. Owing to the perishable structure of these fish they would leave no evidence of their presence. The earliest true fish-like vertebrate is *Scaphaspis ludensis*, from the lower Ludlow of Leintwardine, Shropshire. The next Order, *Plagiostomes*, comprises the Sharks and the Rays. These have no continuous covering of scales or ganoid-plates, but of more or less detached tubercles or spines, scattered here and there on the skin. They have neither gill-covers nor operculum, but branchial slits, which

are on the side of the head in the Shark, and on the lower surface of the head in the Ray. The skull and lower jaw are well developed, but there are no cranial bones; the vertebral column is sometimes composed of distinct vertebræ, and sometimes they are cartilaginous; the pectoral arch has no clavicle. Most of the *Plagiostomes* have the lower lobe of the tail, which is slightly turned upwards, larger than the upper, and is termed heterocercal; but this is not always the case. In several of the Rays the tail is straight and the fin equally developed above and below, *diphycercal*. In consequence of the perishable nature of their skeletons only detached spines, teeth, &c., are usually met with in the rocks; however, complete fish have been met with in the Lias of Lyme Regis. The *Plagiostomes* have been found in the Upper Ludlow rocks at the close of the Upper Silurian. Their early forms were provided with large fin-spines, known to geologists as ichthyodorulites. The Rays appeared before the Sharks, occurring as early as the Carboniferous, continuing through the Secondary and Tertiary Rocks.

At the present day the skeletons of ganoid-fish show great variations from a condition of primordial cartilage to complete ossification, some having no greater development than is exhibited in the persistent cartilage of the Ray and Shark. Others approach the Teleosteans so closely that their ganoid character can only be identified by other distinctions; the vertebral column, with few exceptions, remain cartilaginous throughout life, and the skull, excepting among the older members of the order, has distinct cranial bones, and is furnished with a lower jaw. The body has an outer covering of rhomboidal shining ganoid scales, composed of two layers, the inferior bone, and the upper enamel; they are placed edge to edge in oblique rows. In the older forms there are no vertebral centra, and the skull, which is cartilaginous, is protected by plates, whereas in the later forms the margins of the vertebræ are either ossified or have osseous rings enclosing the primitive matter of the notochord. Some, however, are similar to the Teleosteans. The gills are free and protected by an operculum.

The majority of the fossil ganoids belong to the Palæozoic and Mesozoic age, and are only scantily represented now, the sturgeon being one ; the ganoid-plates are united into a shield over the head, but are detached over the body ; the mouth is not furnished with teeth ; the tail is heterocercal. The sub-order, *Acipenseroidei*, to which the Sturgeon belongs, is not known with certainty to have come into existence before the Eocene age, when it is represented by the *Acipenser toliapicus* of the London clay. The living ganoids are, for the most part, inhabitants of fresh waters ; but many of the extinct forms are associated with marine animals, therefore they probably inhabited the sea.

The Order *Teleostei* includes the great majority of the fish of the present day. The skeleton is partially ossified, distinct cranial bones and a lower jaw. The osseous column consists of completely ossified vertebræ, hollow at both ends, *amphicæalous*, the tail symmetrical. The last vertebra has a central position in the base of the fin, and united to a flat fan-like bone. In some, as the *Salmonidæ*, the last vertebra is turned upwards. The scales are unusually thin, having flexible plates overlapping each other ; some few are furnished with ganoid scales, such as the file-fish, *balistes*, trunk-fish, *ostracion*, and globe fish, *Diodon*. They seem to have appeared for the first time in the cretaceous age, and to have attained their maximum at the present day.

I now proceed with a description of *Histionotus angularis*, which came into the possession of the County Museum last year, for which we have reason to congratulate ourselves, as only three or four specimens have hitherto been met with. It was first described and figured by the late Sir Philip de M. Grey Egerton, Bart., F.R.S., in the Memoirs of the Geological Survey, Decade viii., 1853. The uninterrupted dorsal fin, extending from near the occiput to the tail, suggested the generic name of *Histionotus*, and in this feature it resembles *Ophiopsis*. It has the characters also of other genera, for instance, *Pholidophorus*, in its scales, *Semionotus* in the shape of its body, and *Lepidotus* in the shape of

its head. Sir Philip Egerton, misled by the imperfect preservation of the posterior end of his specimen, thought the caudal fin to be similar to that of *Lepidotus*. By a singular coincidence a fine specimen of *Lepidotus* minor lies side by side on the same slab with the subject of this note, and the caudal fin of each is well exposed, showing that of *Lepidotus* to be comparatively short and truncate, while that of *Histionotus* is deeply forked. In its crushed condition the upper lobe in *Histionotus* is longer and larger than the lower lobe; but this is proved to be a deceptive appearance by another example of the genus I have since met with from the same quarry, which displays the symmetry of the tail fin, the lobes being beautifully shown of equal length.

The outline of the upper portion of the body is triangular, rising abruptly from the snout to a distance of 20 millim. beyond the base of the occiput along the dorsal ridge, and then descending by a less abrupt gradient from this culminating point to the base of the caudal fin, a distance of 85 millim. The depth of the body at the most elevated part of the dorsal ridge to the pectoral fin is 65 mm., to the shoulder-girdle 33 mm.

The anterior margin of the first ray of the dorsal fin, which is stouter than the others, is furnished with a series of fulcral rays. The remaining rays, of which there are more than 20, bifurcate about half-way from the base, and the distal halves are again bifurcated and cleft. The pectoral fin consists of seven rays, of which the first is the longest and stoutest, all are bifurcate and split. Each ventral fin, which is 20 mm. long, has only four rays, the first exceedingly stout and furnished with a series of large marginal fulcra; and all the rays are transversely articulated, or jointed, beyond the point of bifurcation. The anal fin has four rays also, and is the smallest of all; the length of the largest ray being 15 mm. The caudal fin consists of eight rays in each lobe, the upper lobe appearing 40 mm. long, whereas the lower is only 25 mm. The margins of the upper ray of the larger lobe, and of the lower ray of the smaller, are furnished with a series of large fulcra, which probably increased the locomotive power of the tail.

The depth of the shoulder-girdle is 25 mm., and the breadth of the post-clavicular plates 5 mm. The opercular apparatus is well preserved, showing distinctly the operculum (op.), sub-operculum (s. op.), inter-operculum (i. op.), and pre-operculum (p. op.), besides a few branchiostegal rays. These, like the post-clavicular plates of the shoulder-girdle, are all enamelled.

The bones of the head are much crushed. The maxillæ, although perfect, are displaced; and a portion of the right premaxilla is preserved, showing seven teeth with part of the eighth. These teeth are styliform, slender, straight, and smooth, and appear to decrease in size from front to back. The largest is 2 mm. in length. The vomerine bones are hidden, which unfortunately prevents our ascertaining whether or not the roof of the mouth is armed with teeth. The orbit is obliterated by the intrusion of the underlying skull-bones.

The scales of the body are small as compared with those of *Lepidotus*, and are not so lustrous. Those of the flank measure 6 mm. in depth and 2 mm. in breadth. They are rhomboidal in shape, finely pectinated on the posterior exposed margin, arranged obliquely in rows from the dorsal to the ventral region, twelve in a series. The lateral line from head to tail extends along the middle of the flank. Between the last ray of the dorsal fin and the base of the caudal are three double-cone-shaped lustrous ridge-scales, which may have served to strengthen this attenuated part of the body, enabling it to resist the strain upon it when the caudal fin was in action.

Length of body	...	...	...	...	1.80 m.
„ tail, upper lobe	...	...	...	...	0.50 m.
„ „ lower lobe	...	...	...	...	0.30 m.
„ head...	...	...	...	...	0.46 m.
Breadth of head	...	...	...	...	0.40 m.

EXPLANATION OF PLATE.

Histionotus angularis, Egerton; right lateral aspect of fish, nat. size. Middle Purbeck Beds, Swanage, Dorsetshire. *br.*

branchiostegal rays. *i. op.* inter-operculum. *op.* operculum.
p. cl. post-clavicular plates. *p. op.* pre-operculum. *s. op.* sub-
operculum.

The specimen from which the above description is taken, and which is figured in the accompanying plate, was procured by me from a quarry at Herston, near Swanage, Middle Purbecks. It is now preserved in the Dorset County Museum, Dorchester.





Bridport Corporation Records.

By T. WAINWRIGHT, Esq.



MAKING as I do great interest in the subjects, Natural History and Antiquities, I accepted with pleasure the invitation to read a paper on the Bridport Corporation Records ; but on looking at my pile of translations and transcriptions I felt that I had undertaken a really formidable task.

To compress within a twenty minutes' paper a mere list of all the valuable documents you possess would not be possible, and would certainly be very dry and uninteresting. I can, therefore, on this occasion, mention only a portion of them, giving in some instances a specimen of their contents. The volumes and loose documents may be classed under the following heads :—

1. The Dome Books.
2. The Volume of Statutes and Miscellaneous Entries.
3. Law Court Records.
4. Corporation Accounts.
5. Taxations or Assessments of Property.
6. Wills.
7. Deeds Conveying Property to Private Individuals.
8. Deeds of Conveyances to Religious Uses.
9. Inventories of the Property of Religious Houses.
10. Account Books of Various Religious Confraternities.

11. Indulgences Granted to Persons Contributing to the Bridport Leper House in Allington.

12. Miscellaneous.

THE DOME BOOKS.

These two volumes, commencing A.D. 1389 and ending A.D. 1817, contain entries of great interest, illustrating as they do the social condition of the burgesses of different periods, showing in what way the Corporate Funds were raised and how they were expended, and by what officials the government of the borough was conducted.

The following is a specimen of the Bailiffs' accounts. The account of Robert Scarlet and Thomas Bayly Bailiffs of the town of Brideport from the feast of St. Michael the Archangel in the 26th year of the reign of King Henry the VIth to the same feast in the 27th year of the reign of King Henry the VIth:—

Received for stalls	£8	2	8	Rent of shambles	£5	5	0
Assize of ale ...	5	1	3	Two court days	2	7	0
Stedgabell ...	2	6	8	Balance	5	0	
Martins gabell	2	8	0	Total	25	15	7
Paid fee farm rent	£16	0	0				
Salary of the two Bailiffs	2	0	0				
the Clerk's salary	13	4					
present to the clerk and the two bailiffs ...	2	8					
They also received from the fine of John Doget	1	0	0				
Thomas Cherde	1	0	0				
John Dun	1	6	8				
Concerning a horse	4	0					
from John Webbe	6	0					
Thos. Dooge, tanner	4	0					
John Newton, shoemaker	4	0					
John King, shoemaker	2	0					
Total	4	6	8				
Whence was paid to							
John Nebore	£1	0	0				
John Bettiscombe	13	4					
the two bailiffs	13	4					
the two constables	13	4					
Thomas Crosse	6	8					

Whence was paid to	William Hodyfyld	6	8
_____	John Bevyne	6	8
_____	the two sub bailiffs	6	8
_____	the prior of St. John the Baptist	1	6
_____	Wm. Oliver for his journey to London	6	8
_____	for his expenses		8
John atte Were for attending to St. Andrew's bell		2	4
_____	gift to John Peris, clerk	1	8
_____	Wm. Howse for repairing St. Andrew's bell		6

THE CHURCHWARDENS' ACCOUNTS.

The accounts of the Churchwardens of St. Mary's, of which the following is a specimen :—

The accounts of Wm. Hows and John Crokehorne Wardens of the Church of St. Mary at Bridport from the feast of St. Michael in the year of King Henry the 6th after the Conquest the 35th to the same feast of St. Michael in the year of the reign of King Henry the 6th after the Conquest the 36th who rendered their accounts in the presence of the Bailiffs of the same place. They debited themselves with and received from

the year past	...	...	...	...	...	...	...	£2	12	8
They also charged themselves with rents received	...	...	...	...	...	...	...	1	0	3
Also with the receipt at the feast of our Lord's Nativity	...	...	...	...	...	...	...	7	7	
_____	Easter	...	...	...	...	...	...	11	6	
Also received for the seat of Wm. Shete	...	...	...	...	...	...	...	1	4	
_____	Jno. Batisgate	...	...	...	...	...	...	1	0	
_____	Jno. Bremyll...	...	...	...	...	...	...	1	4	
_____	Wm.	...	...	...	...	...	...	1	0	
_____	Wm. Powys	...	...	...	...	...	...	1	0	
_____	two seats of Jno. King	...	...	...	...	...	...	2	0	
_____	of Jno. Dolling...	...	...	...	...	...	...	2	0	
_____	for a silver spoon a bequest of Richard Cheney	...	...	...	...	...	...	1	9	
_____	...	...	...	...	...	...	...		2	
Total								5	3	7
Of which they ask to be credited with	...	...	...	...	...	...	...	1	18	11
And so there remains in the hands of the said wardens	...	...	...	...	...	...	...	3	4	8

The same William and John were elected wardens for the coming year.

The account of John Harris and John Algar Wardens of the church of St. Andrew of Bridport from the feast of Michaelmas in the 35th year of the reign of Henry the VI. to the same feast in the 36th year of Hen. VI. who presented their accounts before the Bailiffs namely Received £2 5 7½. They ask to be credited with payment of different expenses 9sh. and so there remains clear £1 16 8. The churchwardens appointed for the coming year were Richard Marchall and Thomas Warner who received the above sum £1 16 8.

The volume of statutes and miscellaneous entries contains 256 leaves of parchment, not bound together originally, but in two or more volumes; the handwriting throughout is very good, the initial letters are illuminated in red and blue, and almost every word is still legible. The oldest entry appears to have been made in the year 1338, and records the birth of the second daughter of Richard Laurence, to whom the compilation probably belonged and who it is likely was one of the officials of the borough. The contents of the volume are as follow:—

Confirmation of Magna Charta, 25 Ed. I., in 37 chapters; the Charter of Forests; a large number of other Statutes; the Assize of Bread and Ale; a reference to the Contention between Ed. 2 and the Barons about the De Spensers. Entries concerning the Clipping of Money, Weights, and Measures, and the Punishment of Fraudulent Traders. A manual of Legal Forms, filling 105 pages. A statement of the right of the Town to Keelage on the Shore and to take Sand and Pebbles from the same; an inquisition concerning the Foundation of St. Michael's Chapel, the King's Charter respecting the same. Copy of the Deed of Robert de Faringdon, Knight, conveying rents of certain lands and tenements to Sir Nicholas Michel, Chaplain, and his successors who shall daily say a mass for the souls of himself and other persons specified in St. Michael's Chapel. The Rental of the Church and Lights of St. Mary, A.D. 1337; the Rental of the Mass of St. Mary and the Holy Trinity; Rents of the Commonalty; Rental of St. Martin's, which furnishes us with a long list of the names of owners of

land and houses. The deed of Sir William de Legh, Lord of Allington, granting power to the provosts and other lawful men of Bridport to administer the rent from his lands to two chaplains at least and the lepers in the house of St. Mary Magdalen of Bridport and to make enquiry twice in the year whether the said chaplains are living in a becoming manner and treating the brethren and the lepers in a humane way. (The fifty acres of arable land in Allington granted by Sir William are described as situate in Cessecrofte, Berfurlange, Rifuolange, Sartelonde, Gatelinche, Ridgeway, the Linch, and Wetfurlange, beneath the hill near the house, the hemp fields of Langebrome and Modfurlang and Stonilonde near the bridge of Atrecy.)

This deed is followed by a list of the Bailiffs from 6 Ed. 2 to 37 Ed. 3, which enables us to fill up the gaps in the list given in Hutchins ; the number of Bailiffs was ordinarily two, but in 1348 four are named. After this deed is given a number of legal forms filling 193 pages ; among them are (1) The Inventory of the goods of a great man found on the Thursday before the Feast of the Nativity of St. Mary A.D. 1326 in his Hall, Pantry, Larder (among the contents of which are seven barrells of cider and twenty gallons of honey), Kitchen, Brewhouse, Bakehouse, Waggonshed, Barn, Oxstall, Cowhouse, Sheepstall, Pigsty, and Granary.

2. The Will of the great man.

3. The inventory of the goods found in his house on the day of his death.

4. Expenses of the funeral : among these were one bushel of maslin flour given to a man for watching the corpse at night, 3sh. to a woman for nine days' attendance, 9d. for linen cloth in which to sew the body.

5. Expenses of the anniversary day.

6. Discharge of the will by the executor.

Next is found the valuation of the Manor ; the details are very numerous, but the total amounts to no more than £82 5s.

A multiplication table is then given to 12 times 15, the product of which number is represented by $\frac{xx}{ix}$ (nine score) and then going on to 7 times 20.

The proceedings in the Law Court 11 Ed. 3 follow, and a Royal mandate 9 Ed. 3 concerning privileges claimed by the burgesses concludes the volume.

The Law Court Books are six in number; the earliest, A.D. 1571—1601, commences with the oaths taken by the Constables, the Cofferers, the Sergeant, the Free Burgesses, the Bailiffs, the Hayward, the Town Clerk, and the High Sheriff. Then follow fines levied on those who were excused attendance at the Court by payment of a fine. Among these the first named in the volume is John Colfox, jun., who, like the rest, had to pay one penny for his absence. After these come the trials of alleged offenders and the fines imposed on those found guilty. The charges most frequently brought were absence of free tenants from the Court without permission, excessive charges made by millers and butchers, breaking the assize by bakers and brewers, playing at unlawful games, allowing dung and other offensive matter to lie near their premises, committing assaults, not keeping fences in repair, housebreaking, receiving lodgers into their houses, killing calves before the legal time, strange butchers killing animals, and strange bakers selling bread within the borough. Before this Court actions for debt were tried and boys were apprenticed, many to learn the art of rope making, the term of apprenticeship being usually from seven to ten years, the master giving the apprentice at the time of binding one penny for each year of the term and undertaking to provide meat, lodging, Sunday and work-day clothing, to give him 13sh. 4d. at the expiration of the term, and in some trades, as that of shoemaking, all the tools that belong to a journeyman of that occupation. Another function performed at this Court was the granting of licenses to brewers and typlers—that is retailers of beer—who, in the words of the record, were “appointed for this yere according to the order and auncient custome of the borough.” Each of them was bound in £10 with two sureties to observe the

statutes. The number thus licensed was usually from twelve to twenty—a small number it may appear for the population, but in the year 1574 the twelve men say “Wee, the twelve men, do most humbly desire you and your successors, bayliffs, that from henceforth ther be not so many tiplers apointed within this borough.” It does not follow that there is any connection between the two, but the entry preceding this states that “Walter Perygood did hang himself in the Gildhall.” In the year 1577 the Bailiffs, “Considering the great inconvenience that doth and may grow by the excessive number of Typlers yerely apointed,” desire the twelve men to decree that no one shall be licensed but such as can make one sufficient bed, furnished, for the lodging of travellers.”

A presentment of the jury made on the 3rd October, 1566, shows that the disease of leprosy was still found in Bridport, “We present that Thomas Russell is not fit to be among other persons because he is a leper—in the Latin, ‘Lezarus.’” At the same Court William Tucker alias Singleman and others were presented “Because they do use to ware ther hatts uppon the Sabbathe dayes and Holie dayes,” this being a breach of the statute 13 Eliz., c. 19, repealed, 39 Eliz., c. 18, sec. 45, which required all persons to wear on Sundays woollen caps made in England ; they were fined 20sh. each.

Another order of the same Court is that the cucking stool and pillory be repaired by Midsummer, whence, it appears, that there were in those days scolds.

CORPORATION ACCOUNTS.

The earliest of these accounts were kept on sheets of parchment. Most have perished ; the oldest remaining is for the 1st year of Ed. II. reign, and the latest for about the fourteenth year of the same reign. From these accounts it appears that the practice of giving presents to great men was prevalent here as elsewhere. Thus a gallon of wine, price 6d., was on several occasions sent to Sir R. de Farendone ; presents of chickens, beef, veal, and fish were also made to the same personage, who was a Deputy-Sheriff residing

here, and in 1330 became a benefactor by founding the Chapel of St. Michael. In this connection I quote from a later account A.D. 1399, a payment which shows that St. Mary's Church was partially or wholly rebuilt at that period.

Paid the Lord Bishop of Salisbury for the dedication of the Church £4 13 4.

The taxation or assessments remaining are three.

In the 9th of Edward II. the taxation was one-fifteenth, when each householder's moveables having been appraised he was required to pay one-fifteenth of their value. The wealthiest inhabitant rated was William Bume, whose possessions are assessed as follow :—One horse value 10sh., one pig value 2sh., twine value 40sh., cordage and hemp value 40sh., two beds 10sh., brass pots value 20sh., one chest of maser wood value 6sh. 8d., corn value 20s., one ewer and basin value 4sh., one large and one small chest value 10sh., one hundred lots of hemp value 17sh. 4d.—total value 180sh., tax 12sh. The property of ten of the burgesses was assessed at 15sh., and even from these was exacted the fifteenth—1 shilling.

The next taxation made, A.D. 1319, was of one-twelfth; 67 burgesses were assessed. The wealthiest of them was Robert de Bothenhamtone, and his possessions amount to no more than £4 8s., thus made up :—One cow 7sh., 2 hogs 6sh., 2 brass platters 5sh., hides £3, and furniture in his chamber 10sh.

The third taxation made, A.D. 1323, was of one-sixth. The number now assessed was 80. The population seems to have been poorer than it was four years previously, but the exaction was even more vigorously enforced, one shilling being demanded from a man whose entire goods were worth only 6sh. I am surprised and disappointed not to find among the records the well known and interesting Taxation of Pope Nicholas III., but it seems to have been lost.

WILLS.

The number of wills is very large, and the contents are most interesting, furnishing as they do the names of inhabitants of

Bridport and giving information respecting the different kinds of property bequeathed. The testator commenced by commending his soul to Almighty God, and directing his body to be buried in some specified church or churchyard. The first bequests were usually a few pence to the Cathedral of Sarum, the same to the churches and religious houses of the borough, and then followed the legacies to relations and friends.

The deeds conveying property to private individuals also furnish much matter of local interest respecting persons and localities.

The deeds of conveyances to religious uses are very numerous ; they are usually gifts of houses or land, and were in favour of the Chantry of the Blessed Virgin, the Mass of the Blessed Virgin in St. Mary's, the Hospital of St. John the Baptist, the mass of the Blessed Virgin in St. Andrew's, the Brotherhood of the Holy Trinity in the Church of St. Andrew's, or the House of St. Mary Magdalene of the Lepers of Bridport.

The following inventories of the properties of Religious Houses are preserved :—St. Katherine's Chapel, the date about A.D. 1387 ; St. John's Chapel, of the same date ; St. Andrew's Chapel, A.D. 1401 ; St. Michael's Chantry, A.D. 1408 ; another of St. Andrew's Chapel, A.D. 1451 ; St. John the Baptist's, 1454.

The list of vestments, books, and other implements of Divine service are interesting to the ecclesiastical historian, and the inventory of household furniture not less so to those who desire to know how monks and others lived five centuries ago.

The books of the religious confraternities include those of the Brotherhood of St. Nicholas, the Brotherhood of the Brethren and Sisters of the Light hanging before the Cross in the Church of the Blessed Mary of Bridport, The Brethren and Sisters of the Brotherhood St. Mary the Virgin and St. James the Apostle in the Church of St. Andrew's, the Brethren and Sisters of the Brotherhood of the Torches in the Church of the Blessed Mary, the Brotherhood of St. Katherine, the Brotherhood of the Light of the Holy Cross in the Church of St. Andrew.

In the accounts of most of these fraternities a list of members is given with their annual contributions, which were usually a few pence or half-a-pound of wax. From the income were defrayed the expenses of the burning of tapers and the singing of masses for deceased members. Relief to the amount of $\frac{1}{4}$ d. per week was, in some fraternities, granted to members who had become poor, and the cost of interment of those who died so was defrayed.

I will here make an extract from a volume containing an account of the weekly expenditure of St. Michael's.

For the week ending Saturday next after the Feast of the Invention of the Holy Cross (May 3) :—

Bread, 1s. $1\frac{1}{2}$ d. ; ale, 1s. 4d. ; meat, 1s. 3d. ; fish, &c., 9d. ; oatmeal, $2\frac{1}{2}$ d. ; butter, $1\frac{1}{2}$ d. ; eggs, 3d.—total, 5s. $0\frac{1}{2}$ d. There were two strangers in the house for one day this week and two others for the whole week.

During a week in Lent ending 7th March, 1456, when there were no strangers in the house, the sum laid out was 3s. 2d., as follows :—

Bread, 6d. ; ale, 9d. ; fish, 1s. 3d. ; almonds, 1d. ; saffron, 1d. ; figs, 1d. ; raisins, 1d. ; mustard, 1d. During the preceding week 8d. had been expended in a bushel of peas.

It appears that the expenditure during 49 weeks in 1453-4 was for bread, $1/13/3\frac{1}{2}$; ale, $2/2/5\frac{1}{2}$; meat, $1/12/9$; fish, $1/12/4\frac{1}{2}$; oatmeal, 1s. 8d. ; butter, 1s. 4d. ; beans, $\frac{1}{2}$ d. ; cheese, 6d. ; sucking pigs, 1sh. 2d. ; ginger, $\frac{1}{2}$ d. ; mustard, 2d. ; milk, 3d. ; eggs, 10d. ; figs $9\frac{1}{2}$ d. ; pepper, $\frac{1}{2}$ d. ; saffron, $2\frac{1}{2}$ d. ; raisins, $1\frac{1}{2}$ d. ; wine, 9d. ; sundries, 5d.—total, $7/9/2\frac{1}{2}$ = 3s. $0\frac{1}{2}$ d. per week.

Among the indulgences granted to persons contributing to the maintenance of the Leper House in Allington is a fine parchment deed with blue and rubric letters, which gives an account of the indulgence granted to benefactors by Pope Alexander IV. (1254—1261) who authorises :—

“All manere of Curates of mannys sowle to absoyle all bretherne, systerne, and goode doers of the Leper House of Marie Magdalene in Allington of all manere of vowys except the vowys of the Holy

Land, to Seint Jamys and the Vow of chastity and in remission of their synnes the sayde Pope graunteth a yere and XL (40) days. Item to all thos that gevyn broche, ryng, boke, belle, candell, vestiment, bord cloth, towell, pigge, lambe, wolle, pony, or penny-worthe by which the saide house is amended and mentayned, the the sayd Pope graunteth remission of the vij th part of penance injunct (injoined)." This indulgence is confirmed by other Popes and Bishops, by whom further grants of indulgence are made. The document thus framed was carried about by the Proctor and Under-Proctor of the house, "having been sealed with the common seal of our town of Brydporte before sayd, the VII day of September in the VII yere of the regne of Kyng Edward the IVth to gather, ask, and receive such alms as it may please Christian people to give 'the foresayde pore leprous menne because of their horrible disease and infirmitie'" not being able to labour, to ask, and gather their living and sustenance.

This is confirmed by Honorius III. and five other Popes who each grant one year and forty days pardon; thirty Cardinals grant forty days pardon, and other Saints and Bishops each forty days, the sum total, according to the document, being eleven thousand and six years.

The miscellaneous documents are of every character possible, and abound in interesting matter respecting the town and its inhabitants during the time which they cover.

My time being exhausted I will conclude this brief account of the Bridport Records by inviting you to inspect the selection lent by the Corporation, which includes the following:—

The Book of the Fraternity of St. Mary the Virgin and St. James.

The Charter of 1 James 1st and a Translation of the same.

The Charter of 17 James 1st and a Translation of the same.

The Confirmation of the Charter 18 Charles II.

The Charter of Charles II.

Translation of the grant of a market and three fairs by Queen Elizabeth.

Indulgence for 40 days granted by twelve Bishops.

License of Edward III. to the Bailiffs to assign rents to a Chaplain to say Mass notwithstanding the statutes of Mortmain.

Richard the Second's Inspeximus of the Charter of Henry III.
The oldest Volume containing statutes, &c., commencing
A.D. 1338.

The Book of the Fraternity of the Holy Cross in St. Andrew's Church.

The Book of the Fraternity of the two lights called Torchys.

The Book of the Fraternity of the light hanging before the cross in St. Mary's.

The Book of the Fraternity of St. Nicholas in St. Mary's.

The Book of the Fraternity of St. Katherine.

The weekly expenditure of the monks of St. Michael's,
1453-1458.

Three books of the Law Courts, Hen. III. to Henry VI.,
Hen. VIII. to Eliz., 1 to 10 Jas. I.

Attestation of John Helliard and Henry Hylling, clerks and notaries, that they had seen the indulgences granted by certain Bishops to all persons contributing to the repair of Bridport Harbour.

Pardon for offences that may have been committed by the Bailiffs and Burgesses 24 Henry VI.

Deed by which Robert Aynulf grants to the Hospital of St. John the Baptist a piece of land lying opposite the Hospital.

Deed of gift by Eudo de Morville to Wm. Lautrepayr, Henry III.

Deed of Wm. Dol granting a curtilage to the cofferers, Ed. II.
Extracts from the Gospels and Church Kalendar (illuminated).

Grant of seats in the parish church in the gallery over St. Katherine's aisle.





The Geology of Bridport.

(Written with reference to the Coast Excursion on July 10th, 1889.)

By the Rev. HENRY SHAEN SOLLY, M.A.



FEW towns are so favourably situated for the study of Geology as Bridport. Situated at one end of the Jurassic System, which stretches all across England from Dorsetshire to Yorkshire, just at the junction of the Liassic and Oolitic Series, and within easy reach of the New Red Sandstone on the West and the Cretaceous Series on the East, the neighbourhood readily affords examples of Nature's work during the entire Secondary or Mesozoic Era, and has produced abundant and remarkable specimens of the Reptilian Life, which is the grand characteristic of this great Group of Rocks. But the special advantage of the situation near the sea coast is the magnificent range of cliffs extending from Pinney Bay to Burton Bradstock, where Nature furnishes us with a splendid section of the entire series of Lower, Middle, and Upper Lias, as well as specimens of the Oolitic Series, together with interesting outliers of Gault and Greensand.

The whole system has the usual English tilt, the strata sloping downwards from West to East, so that, as we pass along in this direction, we come regularly upon higher and higher beds. Here and there, however, the succession is interrupted by "Faults." This general tilt in the stratification of English rocks suggests that the granite hills of Cornwall, and the Archaean mountains of Wales and Cumberland, are the surviving relics of a mountain range which must have rivalled the Himalayas or the Andes, so that once a large portion of the whole island formed part of the Eastern slope of such a range which stood between it and the deep Atlantic Ocean. These Palaeozoic rocks contributed at a still early period to the conditions under which the sedimentary deposits of the Mesozoic Era were laid down. For instance, the New Red Sandstone probably tells us of a period when the strata were laid down in a large inland salt lake, like the Caspian Sea ; while the " Liassic and Oolitic formations were sediments laid down in warm seas surrounding an archipelago of which Dartmoor, Wales, and Cumberland formed some of the islands." These islands would, in many cases, be surrounded by coral reefs, like those now found in the Pacific Ocean, and had a flora and fauna not unlike that found in Australia. For the deposition of most of the Liassic strata we further require the existence, perhaps in the North Atlantic, of a large continent, whose rivers, after running over extensive flats, where they would deposit their gravel and sand and carry on only the finer mud, then emptied themselves into a sheltered sea where this mud would quietly settle. Such a condition now exists on the eastern shores of Asia. For the succeeding Oolitic epoch we may have had a more open coral sea, extending over the greater part of Europe, where the sediments were formed almost exclusively by the grinding down and cementing together of the *débris* of the habitations of the industrious coral polype. But at different places formations of very different lithological character would be taking place at the same time, and the Jurassic System, which extends over a considerable portion of France, and underlies the great plain

of Germany, which is found in the Alps and the Apennines, as well as in the Jura Mountains, from whence it takes its name, and is also well represented in India and North America, exhibits these differences in every possible variety. It must be clearly understood that it is the study of fossil forms of life which determines the divisions and groupings of the strata, and the various species of ammonites are useful for determining and naming the Palæontological zones. Again, the same place will exhibit the successive deposition of beds identical in appearance, but containing a succession of varying fossil forms of life, or, again, with comparatively little change in the fossil life we may have a succession of beds greatly differing in the nature of their sedimentary materials. Between the top of the Lias and the top of the Portlandian stage there is in England a five-fold repetition of a three-fold arrangement of Argillaceous, Arenaceous, and Calcareous beds. "Such an alternation of sediments," says Professor Geikie,* "points to interrupted depression of the sea bottom. It permitted the growth and preservation of different kinds of marine organisms in succession over the same areas—at one time sandbanks, followed by a growth of coral reefs, with abundant sea-urchins and shells, and then by an inroad of fine mud, which destroyed the coral reefs, but in which, as it sank to the bottom, the abundant cephalopods and other mollusks of the series were admirably preserved." Some of these inroads of mud doubtless occurred at the time of spring freshets when quantities of Ammonites and Belemnites and other mollusca would be overwhelmed, buried, and preserved, in the torpid condition in which they had passed the winter. But beyond the effect of such floods as still occur in many parts of the world we have no reason to imagine the existence of catastrophic changes. The fundamental lesson Geology has to teach us is the vastness of the work that may be accomplished by the steady action of natural causes acting through enormous periods of time; and the cliffs of Dorsetshire bear impressive witness to the stupendous patience of Creative Energy.

* Geikie *Text Book*, p. 774.

Let us now turn to the section furnished by these Cliffs along our coast.* At Pinney Bay, two miles west of Lyme Regis, we have an example of No. 1, White Lias, which, properly speaking, is not Lias at all, but belongs to the Rhætic beds which occur between the Lias and the previous period of New Red Sandstone. Over this comes the Lower Lias, first the celebrated (2) Blue Lias, about 100ft. thick, containing the limestone which is so valuable for cement. Some of the fossils which have made Lyme Regis famous were discovered in this bed, but more above the "Table Ledge," a pale grey band of Limestone which extends between the Blue Lias and a bed (3), of Dark Clay and Shale, 180ft. thick. These beds we shall see only in the distance to-morrow. They contain considerable quantities of Iron Pyrites, which have been worked for the manufacture of sulphuric acid. Their decomposition has sometimes given rise to spontaneous combustion. "In August, 1751, after very hot weather, followed by rain, the Lias cliffs at one spot began to smoke and soon afterwards to burn with a visible flame."† Next comes (4) the Pale Grey Marl, 80ft. thick, which constitutes the Belemnite Bed. These are thrown down by a fault at the foot of Golden Cap, but may be visited there at low tide; and I hope we shall have a good opportunity of examining this place to-morrow. The stratum is "capped with a thin bed of Pale Grey Limestone, known as the Belemnite Stone, which yields *Ammonites Henleyi*," as well as a profusion of Belemnites, in some of which the ink-bag has been found containing sepia with which sketches have been drawn. It is this stone bed which must be sought for under Golden Cap in places where the sea has washed away the softer superincumbent clay and left exposed considerable platforms of the stone. It is succeeded by (5) the Green Ammonite Bed, about 100ft. of dark bluish Grey Clay, which is now reckoned the highest stratum of the Lower Lias. It takes its name from the

* See woodcut, p. 113, taken from a block kindly lent by Mr. H. B. Woodward.

† H. B. Woodward, *Geology of England and Wales*, p. 270.

green tint of the calc-spar which fills the chambers of the characteristic Ammonite, *Am. Latucosta*, fragments of which are extremely common. This bed forms the base of the cliff all the way from Stanton St. Gabriel to Seatown.

Next comes (6) the lowest bed of the Middle Lias, or Marl-stone as it is called in the Geological Survey Maps and elsewhere. This lowest bed, 200ft. thick, is indistinguishable in appearance from No 5; but the diversion is clearly marked in many places by those massive bands of rock, called the Three Tiers, which form the base of the Middle Lias, and which frequently stand out conspicuously when the softer Clay has been weathered away. Great blocks of these stone beds strew the shore all along the base of Golden Cap and form the natural breakwater which has preserved for us this splendid hill. The characteristic fossil of the Clay above the Three Tiers is *Ammonites Margaritatus*, which is found in great abundance. The bed is capped by the Starfish Bed, 5ft. thick, a greenish-gray sandstone with remarkably smooth surface. Still looking up the cliff of Golden Cap we come upon some 80 feet of (7) Laminated Sands and Clays with a little Bluish Grey Marl. Above this very extensive denudation must have taken place, for the Yellow Sands (14) which constitute the summit of Golden Cap belong to the Cretaceous System, and consist of Chert, Gravel, and Upper Greensand, which, at one time, no doubt, lay just below the large sheet of Chalk which then stretched over almost the whole of Southern England.

At Seatown there is a Fault which throws the Green Ammonite Beds below sea level, and brings the clay with *A. Margaritatus* (6) down to the top of the beach. The walk along here under Down Cliff is particularly instructive. The shore is strewn with fallen masses from the harder rocks above, including numerous slabs from the Starfish Bed, in which it is easy to recognise the places where the fossil starfish once were, but whence they seem all to have been removed by the too industrious collectors. The position of this Starfish Bed in the cliffs may generally be

distinguished by a line of springs, as the clay below is more impervious to water than that above, which consists of the Laminated beds (7) we have met before under Golden Cap. Next comes (8) some 70 or 80 feet of yellow micaceous Sands and Clays, which further inland form the sides of the deep lane behind Symondsburry. Inland they are hard to distinguish from the Midford Sands (10), of which we shall speak directly. In the cliff, however, they are distinctly separated by a band of Lias Clay, known as the Upper Lias, here some 70 feet thick. A curious fact is that the Brown Nodular Marlstone which caps the Middle Lias is cemented to a pale cream-coloured and pink Limestone, which forms the base of the Upper Lias, so as to form one single rock bed about 3ft. thick. Fragments of this junction-bed may be found on the shore at the base of the cliff, the lower portion containing several species of *Pleurotomaria*, together with *A. Spinatus* and *Communis*, the upper portion containing *A. Bifrons*, *Serpentinus*, and *Communis*. It is in the Upper Lias beds near Whitby that the jet is found which is so valuable an article of local manufacture. Jet is simply a resinous variety of lignite formed from coniferous wood. I do not know if any specimens have been obtained in this neighbourhood, but it is quite possible they might be.

Above the Upper Lias in Down Cliff come the Midford Sands (10), and these mark the transition from the Liassic to the Oolitic Epoch, being generally classed now with the latter series. The Palæontological affinities of these sands are, however, not finally determined, and the discovery in them of any new Ammonite would be of real service to the Geological Survey. They are best known to us in the fine perpendicular cliffs to the east of Bridport Harbour, but they largely contribute to much of our local scenery; the hills from Upper Lodgers to Chideock being chiefly composed of Midford Sand, while the valleys are Middle Lias. Glastonbury Tor and Brent Knoll are Midford Sand. We may note that the celebrated Ham Hill building stone is Midford Sand, and it is quite possible that in this neighbourhood there are beds of it sufficiently

tenacious to furnish a good stone for building. The sand is good for foundry purposes.

In Down Cliff the beds above the Midford Sands have all been washed away, but just the summit of Thornecombe Beacon shows some of the Greensand which is found in so much greater thickness on Golden Cap, as well as on Eype Down and the more distant heights of Pillesdon and Lewesdon, Stonebarrow, &c. We have, however, only to look across to the other side of Bridport Harbour to see the cliffs crowned and protected by a thin cap of (11) Inferior Oolite. This hard rock, much used for road metal and field walls, furnishes a similar cap for Allington Hill, Sleuse Hill, and Chideock Quarry. It is extremely fossiliferous, especially for mollusks in great variety.

A very interesting double Fault between Eypemouth and Bridport Harbour has preserved for us a portion of cliff exhibiting the next two strata in our ascending series. Some 400 yards east of Eypemouth we have a down-throw of 425ft., and into the great crack thus opened has fallen a large mass of (12) Fuller's Earth. Half-a-mile further along the coast this is faulted again against the Midford Sands just before we reach the Harbour. For a considerable distance it is capped by (13) Forest Marble, including Bradford Clay, in a bed of which may be abundantly found the characteristic fossil *Rhynchonella Boueti*.

Looking away to the east along the Chesil Beach we shall see, if the weather is tolerably clear, the Isle of Portland; and the Members of the Field Club who came the other day to the summit of Ridgway Hill will not need to be reminded of the admirable view we then had of all the strata—the Forest Marble, Cornbrash, Oxford Clay, Corallian Beds, Kimmeridge Clay, Portland Stone, and Purbecks—which bring us right to the top of the entire Jurassic System.

The following sections in the neighbourhood may be noted for the undermentioned strata:—

Midford Sands—Stoke Nap.

Inferior Oolite—Quarries near Beaminster, Broadwindsor, Mapper-ton, Poorstock, Loders, Blue Ball, Shipton Gorge, Burton Bradstock, and Chideock Hill.

Fuller's Earth—Eype Cliff, Poorstock Station (near), Brickyard between there and Toller, Cliff End Burton.

Forest Marble—Bothenhampton, North Hill, Eype Cliff, Cliff End Burton, Bredy Hill, South of Greensand Knoll, South of Puncknoll.

Cornbrash—Pit S.E. of Cogden, E. of Burton Bradstock, Pit near Puncknoll and Swyre.

Oxford Clay—Brickyard S.S.E. of Hammerdon Hill.

Kellaway's Rock has not been found in Dorsetshire, but may be looked for near Chilcombe or Rampisham.

One word about the Chesil Beach. It is mainly composed of pebbles brought from Devonshire, which have been stopped in their eastward progress by the great natural groyn of the Isle of Portland, and then seem to have been washed back and ground smaller and smaller in the process till arrested by the pier of Bridport Harbour and carted away for commercial purposes. At Chesilton we may pick up plenty of Budleigh Salterton pebbles about the same size as they are found at Budleigh Salterton. They seem to have been washed straight across the bay, suffering very little wear and tear. At Bridport Harbour we find these pebbles in abundance ground down to mere grains, though still often preserving their characteristic shape, and, fast as the material is carted away, it is regularly replaced by the ceaseless action of the sea. That this is what happens seems tolerably plain; but why the sea acts with this eastward current across the bay and the return eddy along the shore has, I believe, never been satisfactorily explained.

In conclusion I would beg to suggest that on some suitable occasion the Club should petition the Government to give us a Geological Survey Map of Dorset on the 6-inch scale. Hampshire petitioned for this and got it. Much work remains to be done in this county which will never be done satisfactorily by amateurs—*e.g.*, in connection with the Greensand and Chalk east and north-

east of Bridport. Further information about the distribution of the Lias would, I venture to think, be useful to agriculturists and landowners. The celebrated Stilton Cheese, as well as "Double Gloucester" and Cheddar, are manufactured in other counties out of the Lower Lias clay ; while the Middle Lias beds elsewhere furnish many valuable economic products, from the Middlesborough iron ore to the apple trees of Rutland—*i.e.*, redland. Our present map is antiquated, besides being on too small a scale, and the time is coming when the Geological Survey will really be in want of another job. If the Dorset Field Club leads the way, and our County Council supports the petition, such a combination of local influence would prove irresistible, and we should speedily have a map worthy of the County.





Note on the Fault in the Cliff West of Bridport Harbour.

By H. SHAEN SOLLY, M.A., and JOHN FRANCIS
WALKER, M.A., F.G.S.



N the Cliff west of Bridport Harbour there is an interesting and complicated Fault, on which it may be worth while to offer a note, especially as this portion of our coast will before very long be washed away by the land springs and the tides. It is, however, necessary to caution the student that the observation of the Cliff is far from easy on account of the very different appearance it presents at different seasons of the year, and the way the lower portions are obscured by the slipping, or washing, down of the higher beds. In wet weather the water falling on the surface of the cliffs cut deep gullies, while high tides undermine the base. Huge overhanging masses, therefore, fall from time to time, often in hot dry weather throwing up clouds of dust. The fallen material is rapidly removed by the sea.

The Cliffs begin with Midford Sands of the same level as, and similar to, the well known Cliffs to the east of the Harbour. After 70 yards we reach the beginning of the Fault, and find traces of a considerable downthrow. First we have a section of M.S. 15 feet in height from the base of the Cliff, but it is M.S. of a higher

level—viz., that found immediately under the Inferior Oolite, which has here all been removed by denudation.

Thirty-three yards further to the west the I.O. can be seen in position, about 2 feet thick. In 1888 Mr. Walker found in a bed of clay about $1\frac{1}{2}$ feet thick, immediately above the I.O., a flat variety of *Terebratula Phillipsii*, also *T. decipiens*, and Ammonites which have been determined by S. S. Buckman, F.G.S., as *Perispinetes* sp. and *Oppelia fusca*. This I.O. clay occurs at the top of the quarries around Crewkerne and Broadwindsor, and was first noticed by J. F. Walker in his paper on *T. Morieri*, Geol. Mag. 1878.

These beds slope down towards the west below the Fuller's Earth, and at a distance of fifty-six yards appear to reach the level of the beach. Near this point the junction of the M.S. and I.O. consists of a rubbly broken conglomerate, composed of I.O. cemented together with iron-sand: the pieces appear to vary in size from a cubic foot to the size of coarse gravel, showing that extensive denudation occurred before the deposition of the *Parkinsoni* zone of the Inferior Oolite. The I.O. itself is a very hard rock containing masses of iron pyrites, and is of a greenish white colour, due to the iron being chiefly in a state of prot-oxide.

The greater part of the I.O. seems to belong to the *Parkinsoni* zone, as it contains the characteristic fossils *T. spheroidalis*, *T. stephani*, *A. parkinsoni*, *Waldheimia carinata*, *Acanthothyris spinosa*. Some of these fossils are a dark blue colour, having been protected by the clay from oxidation. The top of the cliff above the Fuller's Earth contains brown surface soil, probably derived from the decomposition and washing down of Forest Marble.

Beyond this point the base of the cliff at present shows no trace of either M.S. or I.O., but blocks of these are plentifully strewn along the shore and running out into the sea form the Black Rocks.

One hundred and sixty yards further west we arrive at another good point of observation. Here bands of stone, ten or more in

number, belonging to the Lower Fuller's Earth, reach the level of the beach. These can be traced more or less perfectly, according to the state of the cliff, rising eastward at an angle of 34° . Up to this point the clay composing the bulk of the cliffs is of a very much darker colour than that further west: this is seen best in dry weather, and was once specially noted by Mr. Walker when passing the coast in Mr. Thompson Stephens' steam launch, and suggested to Mr. Walker that at this point we have an important, though hitherto unobserved, Fault in the Fuller's Earth itself. Both the bands of the rock and the clay between contain abundance of *Rhynchonella Smithii*, also specimens of *T. globata* and *Waldheimia ornithocephala*, nearly always crushed, and more rarely *Acanthothyris spinosa*, var. *Poorstockensis*. The rock also contains a costate *Trigonia*, allied to *Trigonia elongata*, from which it appears to differ by the costæ being more numerous (we propose to call it variety *Stephensi*), a large *Pholodomya*, *Modiola gibbosa* var., *Ostrea acuminate*, which occurs sometimes in masses, and various bivalves too imperfect to determine; also a small Belemnite, *B. parallela*. This section of the Cliff is clearly Lower Fuller's Earth.

Beyond this point the Cliff, stretching towards Eype, appears to be Upper Fuller's Earth. It is paler in colour, and contains very few fossils, except some imperfect bivalves, and these are far from plentiful. This stratum gradually passes into Bradford Clay and Forest Marble, with which it is capped for a considerable distance. The same bed may be observed in the Cliffs beyond Burton Bradstock, where it is more fossiliferous, containing gasteropoda as well as bivalves; but neither there nor towards Eype does the Upper Fuller's Earth contain any of the fossils which occur in the lower clay. Mr. Walker is of opinion that the Lower Fuller's Earth (with the stone-bands) belongs to the I.O. series, while the Upper Fuller's Earth, which appears to be faulted against the Lower, belongs to the Great Oolite series, and may represent that bed. It is not an unusual occurrence for a rock which is limestone in one place to be represented in other districts by a band of clay.

For instance, Professor Seeley, T. Roberts, and others have shown that the corallian series are represented by a bed of clay in the Fen district.

If this opinion is correct, an important line of division has hitherto escaped all notice on our Bridport coast owing to the faintness of its lithological character, and we have one more instance of the necessity of determining these lines upon a careful study of palæontology.





On the History of Bridport.

By WILLIAM COLFOX, B.A.



T is difficult to compress even a sketch of the history of the town within the narrow limits to which I am confined, but I will endeavour to give some of its salient features. It cannot be professed that there is anything of any great, any national, importance to be told of the place.

Bridport has never been the scene of any great events, has had little to do with war and war's alarms, and has for the most part led as uneventful a life as other towns of its size and importance. But equally perhaps with many of them, if one searches into its records of by-gone days, one may find many matters of interest, and such as one would not willingly allow to be forgotten. And fortunately we have a more or less accurate account of the town for centuries past in the pages of Hutchins, whose History of our County ranks so high among similar works in England, and it is from his work, so well and so extensively enlarged by Messrs. Shipp and Hodson, that I draw the greater part of what I have to present.

Of Bridport in Roman times I am not aware that there is any mention, but the road from Durnovaria to Moridunum must have passed somewhere this way, and Mr. Warne gives the high street of the town as on the line of the Via Iceniana. There are some

members of our club who will perhaps recollect our old and valued friend Mr. Barnes's suggested identification of the Londinis of the anonymous Geographer of Ravenna with Bradpole, taking Londinis to be a Latinised form of a British name Llyndaen, meaning, as he held, broad pool, and which would be therefore the same as Bradpole—also broad pool; but if this were correct the Roman road would have to be sought a little further north than Bridport. Dr. Stukeley says he found it north of the town. Mr. Warne, however, places Londinis conjecturally at Lyme Regis. It would be a matter of much interest if further researches could be made to determine more certainly the position of this station and also that of Canca Arix, which the same geographer gives, and which Mr. Warne suggests to be Charmouth or Bridport, but Mr. Barnes considers was Exmouth, and adduces etymological reasons for so considering. But whether there was any town here in Roman days or not, Bridport is no new place; it was probably of some antiquity at the date of Domesday Book, as it is therein named as having had 120 houses in the time of Edward the Confessor. It was in no very flourishing state, however, at the time of the Conqueror, for Domesday Book goes on to say that "there are now there one hundred houses" (or as Mr. Warne gives it 105), "and twenty are in such a miserable condition" (*ita destitute*) "that they who dwell in them cannot pay the geld." It does not appear whether at that date there had been any beginning of the staple trade for which the place has been known for centuries, but within 150 years thereafter it must have been well established, as will be shown hereafter.

There are many records of, and relating to, the town in after years, but no further description of it that I am aware of extant till the 16th and 17th centuries, when mention of it occurs in the pages of Holinshed, Camden, and Leland. Leland, who died in 1552, but whose Itinerary was published in the latter part of the next century, writes "Britport, of sum written Bruteport, is a fair larg town, and the cheif streat of it lyith in length from West to Est; ther crosse another fair strete in midle of it, into the South."

In the translation with additions of the *Britannia* of Camden (who lived 1551 to 1623), revised by Gibson, it is said "Next," (to Charmouth) "is Burtport, or rather Birtport, seated between two small rivers meeting there, in a soil which produces the best hemp." After him Coker's *Survey of Dorsetshire*, 1732, speaks of "Bertport, an antient Burrough, seated between two Rivers." Bridport also has not been without notices in verse, for Drayton (1563 to 1631), Poet Laureate, speaks of it in his *Polyolbion* in the following lines :—

" to Bert-port which hath gain'd
That praise from every place, and worthilie obtain'd
Our cordage from her store, and cables should be made,
Of any in that kind most fit for marine trade."

And Gay in his "Journey to Exeter" writes, though in not very complimentary terms of our wide streets,

" Through Bridport's stony lanes our rout we take."

But I must not linger on general description. Our town, though an old one, has not preserved much of its ancient character, though there are some things remaining which will interest those of our Club who are antiquarians. The Parish Church is of ancient date, though it "cannot have been erected," I quote from the Rev. Jos. Maskell's *History and Topography of Bridport*, a small brochure published in 1855, "before the latter part of the 14th or early in the 15th century," the style of architecture belonging "to the perpendicular order," or partaking "more or less both of the decorated and perpendicular styles." In *Hutchins* it is said that "its architecture is mainly Perpendicular," but it is added "a considerable portion of the transepts is of Early English character." The Church was restored in 1859-60, when the nave was lengthened, but the greater part of the old building remains. The north and south transept windows are worthy of notice, as is also a small room over the south porch. There is a great lack of ancient monuments; there remains "an effigie of a man cross-legged, in complete armour, except the head,

with shield and sword, but no arms on the shield." The tomb has been assigned to one of the de Chideocks, but in the absence of arms or inscription this is of course doubtful. And in Hutchins's time there was an altar tomb, of grey marble on the north side of the chancel, of William, a relative of Philippa, Queen of Edward 3rd. There were other religious houses in Bridport in pre-Reformation days, but of these scarcely any traces remain. Near the East Bridge stood the Hospital of St. John the Baptist, of which there are very slight remains at the back of the last house on the south side of East Street. Near the north end, I believe, of St. Michael's Lane was the Chapel of St. Michael, founded it would appear in 1324 by Robert de Faryndone and Joan his wife. At the top of the South Street at its junction with the main street of the town, where now stands the Town Hall, stood the Chapel of St. Andrew, in connection with which it may be interesting to mention the existence of a fraternity called "the Brotherhood of the Light of the Holy Cross, in the Church of St. Andrew of Brudeport" for maintaining a light in the church aforesaid. Several small parchment and paper books relating to this and other fraternities are in the possession of the Corporation. Their regulations are curious and interesting, and some, if not all, of these fraternities would appear to have partaken of the nature of our modern friendly societies or clubs. There was also in the neighbouring parish of Allington, and now within the borough of Bridport, "the Hospital of the Lepers of Mary Magdalen, of Bridport," on or near the site of which stands now a small almshouse managed by the Churchwardens of Bridport.

But perhaps more interesting to the antiquary, at all events next to the Church, as more or less of them remain to the present day, are Dungeness and what was known as the Castle, in South Street. Of Dungeness, which is near the bottom of the street on the west side, Hutchins speaks as "an ancient building, said to be the *prior's house*, most probably for one of the chantry priests in the church;" and the 3rd Edition of Hutchins says of it: "Although

the architecture of the whole may be characterised as inferior, yet from its almost perfect condition this house forms a highly interesting study of the arrangements of mediæval dwellings, modified by its evident destination as the residence of a priest." I have not time to give at length the interesting detailed description of the building which the volume contains, but would refer you for it to the work itself. It is satisfactory to know that the premises belong to the Corporation of Bridport, and it is therefore to be hoped will as public property long remain, for the most part at all events, unharmed by the too often ruthless hand of modern improvement. The house was not very many years ago repaired at private expense with the view of retaining its ancient features. The Castle was a house of Tudor Gothic, standing on the east side of the South Street, which may also have been the residence of a chantry priest. It was considerably damaged by fire a few years ago, but the façade remains in a very perfect state, for a detailed account of which I must again refer you to Hutchins. The house was probably called the Castle from having been at one time, I believe, a public-house of that name.

A matter of considerable interest to touch upon in connection with the town is its staple trade, for which, as I before named, the place has been known for centuries. The *raison d'être* of its location here was probably the suitability of the soil in the neighbourhood for the growth of hemp. Hutchins says "The soil being strong and rich, this place, and the adjacent parishes, produce plenty of excellent hemp;" but before him Coker writes in very similar terms of "The adjoineing Soyle yeilding great Store of the best Hemp;" Camden also speaks in like manner of "Birtport seated in a soil which produces the best hemp;" and Drayton in his verse tells of the

"Bert, whose batning mellowed banke,
From all the British soyles, for hemp most hugely rank
Doth bear away the best."

But now that the hemp for the manufactures of the town is

imported from other countries the cultivation of the plant has been abandoned, but the trade continues the main occupation of the place. It was in the 13th of King John that "the sheriff accounts for 3,000 weighs of hempen thread according to Bridport weight (*secundum pondus de Brideport*) for making ships' cables; and 39s. for the expenses of Robert Fisher whilst he stayed at Brideport to procure his nets," which evidently, I take it, points to the fact that the trade of making nets was also then in existence here, as well as that of spinning the thread. Hutchins' 3rd. Edit. gives, too, a letter dated two years after this, 1213, from King John to the sheriffs of Dorset and Somerset, wherein occurs a very interesting clause in connection with the trade: "Also cause to be made at Bridport, night and day, as many ropes for ships, both large and small, and as many cables as you can, and twisted yarns for cordage for balistæ." It was just about this time that the fleet of John conquered the French fleet on the coast of Flanders in the first naval battle between England and France. In Southey's Naval History we read with reference to this engagement, which was fought at Damme, then the port of Bruges, that "the English landed, the Earl of Flanders joined them, and they proceeded to attack the place," in the harbour of which there remained a great part of the enemy's fleet; and if it were not previous to this battle that the cordage was made that was ordered in the letter I have mentioned, yet we may well imagine from this letter that they were Bridport ropes with which the battering engines were worked if any such were used for the assault. King John, I may remark in passing, was not himself unacquainted with Bridport, as he appears to have been here in 1201 on his way from Cranborne to Exeter, and in 1205 he was at Poorstock, whence he may easily have visited Bridport. In the 5th of Edwd. I. we find mention of the trade of the town in a curious document among those in the possession of the Corporation addressed to the Bailiffs of Bridepord from the Bailiffs of Plymptone, making complaint against certain individuals that they had not delivered cords for which it would appear they had received yarn. In the probate

copy of the will of John Clench, made in the year 1313, which is among the Corporation documents, we have several legacies of "bottels of hemp." In the 16th of Edward II. the late sheriff of Dorset petitioned the King and parliament complaining that he had been disallowed 79s. which he had paid for the expenses of 6 ropers proceeding from Bridport to Newcastle-upon-Tyne, sent, perhaps, to instruct the people there in the art of ropemaking. But, however this may be, and whether any rivalry was established there or not, we find that the trade continued in Bridport; in the Corporation documents land cultivated with hemp and flax is mentioned in the reign of Edward III. more than once, and "Searchers of flax and hemp" are named in the 17th of Richard II.; and an Act of Parliament of 21 Henry VIII., after "setting forth that they had, time out of mind, used to make within the town, for the most part, all the great cables, ropes, hawsers, and all other tackling for the royal navy, and the most part of other ships within this realm," "enacted that hemp growing within five miles of the town shall be sold there, on forfeiture of the hemp if sold in any other place within that distance; and that no person but the inhabitants only shall make cables, &c., within the said distance, except for their own use, upon forfeiture of them." This Act was continued by 2 other Acts of Henry VIII., 2 of Edward VI., 1 of Mary, 5 of Elizabeth, 1 of James I., and 1 of Charles I. Such Acts of Parliament would now be out of date, and contrary to our more enlightened ideas and practice, but, notwithstanding the loss of such adventitious aids, the trade remains, and will yet remain, we may hope, for many a long year to come. The intimate connection of the trade with the place in by-gone times is exemplified by the old proverb, with reference to a man's being hanged, that he is stabbed with a Bridport dagger, the metaphorical meaning of which Leland does not appear to have understood when he said "At Bridporth be made good daggers." And the line, "Ones a yere some taw halters of Burporte," that occurs in Hycke Scorne, an old morality which Dr. Percy supposes was printed early in the reign of Henry VIII, is another proof of the staple

trade of Bridport being well known at the date of the book being written.

Bridport Harbour is an important feature in connection with the town, but nothing that I am aware of is known as to when Bridport became a port, and when a harbour was first constructed here. It is not named among the ports of the country in the roll with regard to the Siege of Calais in 1347. It would rather seem as if there were no port before the time of Richard II., as in the 16th year of that reign a grant of customs was made to the bailiffs of the town, in the preamble of which it is stated "whereas it is on your part supplicated that since you have begun anew to build a certain port at the aforesaid town, where a port did not formerly exist." Four years earlier, 12 Richard II., one John Huderfeld had obtained a grant from the King for carrying on the work of forming a port, for which he was to receive certain tolls, but this he may not have accomplished. There is an earlier record that 8 Edward I., the vill of Bridport claims to have toll (*de thelonio culagii*) in the maritime places of Bridport. Mr. Riley, in the Appendix of the 6th Report of the Historical Manuscripts Commission, explains Culagium as "keelage, an exaction for vessels touching ground with the keel"—and this may not imply a regularly constructed harbour. In later times we find indulgences used as means of raising money for the work ; in 22 Henry VI. one such was granted, it appears, by the Bishop of Sarum, "for building and repairing a new port of Brydeport, called Brydeport Haven," and in 1446 another of 40 days by the Bishop of Sarum and other Bishops "to those who contributed to the reparation and sustenance of the haven." There are various interesting entries in the Corporation documents with reference to persons appointed to various offices in connection with the work and the collection of alms therefor. The 3rd Edition of Hutchins gives *in extenso* curious documents relating to indulgences and the like which were issued to urge forward the work ; one in 22 Henry VI. by certain ecclesiastical authorities of the town engaging to celebrate and offer worship "for the good and healthy state of all

the benefactors to the said port, likewise for the souls of those who have departed from this light, also for the souls of the fathers, brethren, and sisters and of our benefactors, in all future time." Another in 24 Henry VI. sent out by the bailiffs and burgesses notifying the granting by the Archbishop of Canterbury and the Bishop of Sarum of 40 days of pardon, and the engagement by certain "pryors and chapeleyns" of the town for themselves and their successors for evermore to pray for all those that gave or bequeathed to the work of the harbour gold, cattle, meat, drink, or service; and a third, dated July 4th, 1446, of the Bishop of Winchester, cardinal of England, granting 100 days indulgence to contributors to the work "being penitent." The Appendix to the Historical Manuscripts Commission Report, to which I have before alluded, gives a description of documents relating to these or similar indulgences, and such-like, for the givers of alms for the harbour, from which it appears that the alms that were sought were not only money, but that "ony good broche or ryng, brokyn or hool, gold or sylvere," "or jowel, or eny other good" would be all acceptable. One of the most curious, perhaps, of these documents is a letter from John Greyve, who appears to have been the "proketour-generall" for Kent and Essex "for to gader the almesse to the haven makying of Brydeport town," giving an account of his proceedings, and more particularly relating at great length how he had been deceived by a man of Loders who had engaged to help him in his work, but had proved false. But we may presume that either there was not enough money collected for the purpose by all these means, or that the harbour had fallen into so much disrepair as not to be of use, as in Leland's and Camden's time there appears to have been none, the former saying "Nature hath so set this ryver mouth in a valley bytwixt two hilles, that with cost the se might be brought in, and there an haven made," and the latter, "at the mouth of the river Nature has projected a very commodious place for an harbour, and seems to call upon Art and Industry to finish it." And the author of the additions to Camden adds, "And these, it was believ'd, wou'd have effected

it, till the Inhabitants of late years made the attempt, and fail'd in the undertaking : the Tydes perpetually barring it with Sand, against which they could not find any remedy." In 1561 it would appear that some effort was made, but it would seem as if little or nothing was carried out, for in 1619 the bailiffs and burgesses petitioned the king, setting forth that they had made collections through near half the kingdom of England and some part of Wales by virtue of His Majesty's letters patent of license enabling them to collect for the re-edifying of their decayed ancient harbour or haven, and their whole net receipts did not amount to 100 marks, which was much too little for the purpose, and they besought the King to allow them to retain the money for other necessary affairs of the borough. The petition being referred to two Justices of the Peace for Dorset, they recommended that the money (amounting to only £61) might be bestowed in the procuring of some maintenance for a schoolmaster which was found to be something defective in the town, and an order in Council was made consequent on such recommendation. In 1722, 8 George I., an Act was obtained to restore and re-build the haven and piers, &c., but was not put in execution till 1741. Coker's Survey, 1732, speaks of there having been "formerlie" "an Harbour for Shipping," "but now" "altogether choaked with the Sands;" in 1756 additional works appear to have been carried out, and in 1823 a new Act was passed by virtue of which a considerable sum was raised and expended in improvements, and it is under this Act that the Harbour is at present governed.

Bridport is one of the old Boroughs of the Kingdom. "The manor," says Hutchins, "antiently belonged to the crown, and was for several ages held of it by the burgesses in fee farm." In 37 Henry III. the town was incorporated as a free borough, paying, however, yearly the farm which they usually paid, and 40s. for the increase of the vill, and the inhabitants were empowered to choose one or two bailiffs to answer at the Exchequer for the farm and increase of the borough. In 1299 Edward I. granted the town of Bridport, with the increment of

the farm thereof, and other appurtenances to the value of £16 in dower to his Queen, Margaret, and an acknowledgment of hers, dated in the 10th year of Edward II., when she was a widow, for three years' payment of this amount is among the papers in the possession of the Corporation. The Charter of Henry III. was confirmed by Richard II., Henry VIII., and Elizabeth. By the Charter of James I. it is provided that the Corporation should consist of 15 burgesses, of whom the bailiffs should be two, the two bailiffs to be chosen by the burgesses yearly. A further Charter was granted by Charles II., dated 1667, by which power was given for not more than five of the burgesses, or as they were then named capital burgesses, to be chosen from any vills, parishes, or hamlets in the county of Dorset lying out of the borough within ten miles thereof. The Municipal Reform Act of 1835 made the parliamentary and municipal boundaries to coincide, and the Corporation to consist of a Mayor, six Aldermen, and 18 Town Councillors, the Mayor to be chosen from the Aldermen and Councillors (but this has been altered,* and the Mayor may now be chosen outside the Council). There are records of the names of the bailiffs from 13 Richard II. with some hiatuses (notably from 17 Charles I. to 8 of the Commonwealth, between 1642 and 1656). Hutchins' 3rd Edition gives also a list of some who served the office in the reigns of Edwd. I., II., and III.

There is in Hutchins, too, a list of Members of Parliament for the borough, beginning 23 Edwd. I., but in which there is no entry for the reigns of Edwd. V., Richd. III., Henry VII., and Henry VIII. That it sent members, however, at all events in the reign of Henry VIII., is seen from memorandums in the Corporation records, from which it would appear that at that time the representatives received remuneration for their services.

In long by-gone years there appears to have been a family taking its name from the town, and the name of John de Bridport occurs as Member for the borough in the Parliament at Westminster in 33 Ewd. I.; and others of the same name, given once as

* Municipal Corporations Act, 1882 (45 and 46 Vict., Cap. 50).

de Brideport, and several other times as de Bridport and Bridport without the de, appear as Members in the reigns of Edwd. II. and Edwd. III. John de Brudeport also appears as Knight of the Shire in the Parliaments of Edwd. III. at York in the 7th and 8th years of his reign.

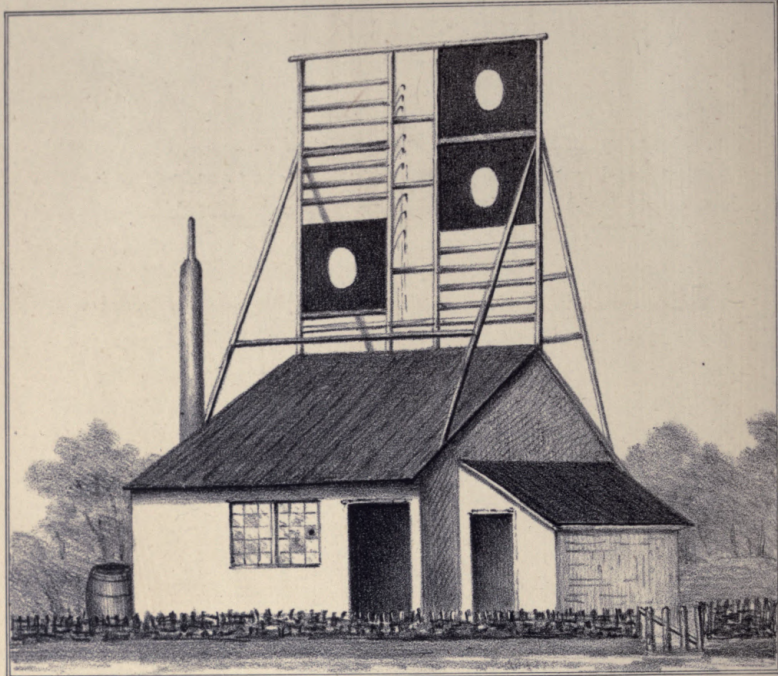
Bridport was formerly one of the four places in Dorset where the General Quarter Sessions of the Peace were held, Dorchester not being one of them, but for many years they have been held regularly at Dorchester.

In Saxon times there were four mints in the County, of which one was at Bridport. From Domesday Book we find that there was in the time of Edward the Confessor one Moneyer (Monetarius), or Mint Master in Bridport, paying an annual Crown rent of one mark (13s. 4d.), and also 20s. on a new coinage (*quando moneta vertebatur*). This office was continued after the Conquest, as is shown by 12 coins struck at Bridport in the reign of William the Conqueror and later, which were found in a large hoard at Beaworth, in Hampshire, in 1833. Previously to this no example, it is said, had been discovered of Bridport coins. Our late respected Hon. Member, Mr. Chas. Warne, had one of the Bridport coins in his collection, which has recently fetched at auction the sum of £8 10s. There were also sundry tokens of tradesmen of Bridport, as of so many other towns. The 3rd Edition of Hutchins enumerates ten, those that are dated ranging from 1657 to 1669.

As respects men of note belonging to Bridport I am afraid that it cannot boast of many; there is one, however, who is said to have been of the good old town, Egidius de Bridport (his name is otherwise given as Bridlesford and Bredelef, but Leland says of him "He was caullid Britport because he was born at Britport in Dorsetshir"), Bishop of Salisbury from 1256 to 1263, who is said to have built much of his Cathedral, which was consecrated in 1258 during his occupancy of the see; and if much of the design of that beautiful church is rightly attributable to him we may well claim him as a man of note. Admiral Lord Bridport, who bore a part in Lord Howe's celebrated victory, June 1st, 1794, and

distinguished himself on many other occasions during the war, can hardly be claimed as connected with the town, as I am not aware that he was so any more than by simply taking his title from it, perhaps in consequence of its being a seaport near his birthplace, if, as I presume, he was born at Thorncombe, where his father was clergyman. And in the present century there is one whom we may almost claim, as though born and resident in the adjoining parish of Bradpole no doubt he often trod the Bridport streets in his early years ; and had we many such men as William Edward Forster, who by his Education Act helped forward we may hope the onward progress of the nation so as to affect for good all succeeding generations of Englishmen, we should not need to consider our town as wanting in men of note.





OLD TELEGRAPH STATION AT HIGH STOY.

1 2 3 4 5 6	1 	2 	3 	4 	5 	6 	1 2 	1 3 	1 4 	1 5
1 6	2 3 	2 4 	2 5	2 6	3 4 	3 5	3 6	4 5	4 6	5 6
1 2 3 	1 2 4 	1 2 5	1 2 6	1 3 4 	1 3 5	1 3 6	1 4 5	1 4 6	1 5 6	2 3 4
2 3 5	2 3 6	2 4 5	2 4 6	2 5 6	3 4 5	3 4 6	3 5 6	4 5 6	1 2 3 4 	1 2 3 5
1 2 3 6	1 2 4 5	1 2 4 6	1 2 5 6	1 3 4 5	1 3 4 6	1 3 5 6	1 4 5 6	2 3 4 5	2 3 4 6	2 3 5 6
2 4 5 6	3 4 5 6	2 3 4 5 6	1 3 4 5 6	1 2 3 5 6	1 2 3 6	1 2 3 4 5	1 2 3 4 6	 	 	

SIGNALLING IN USE AT THE ABOVE STATION.



The Telegraph in Dorset before the Days of Electricity.

By Mr. T. B. GROVES, F.C.S. (of Weymouth).



It would be out of place to preface this short paper with a history of Telegraphy ; but I would venture to suggest to those interested in the subject of Beacons, Telegraphs, Semaphores, and such things that a full and very able article on them may be found in that useful, but little consulted work, the Penny Encyclopædia, from which I have derived much of the information now offered.

The necessity for communicating with distant friends must have been felt in the very earliest times ; we are, therefore, not surprised to find reference to Telegraphy of some form in most of the ancient writers, whether sacred or profane. Indeed, the very sparseness of population in days the most remote from civilisation rendered it all the more imperative to be able to announce to distant friends approaching danger, or the intended direction of a tribal movement. At the present day the North-American Indians have a code of signals by which they communicate information to great distances by means of a cloud of smoke by day or a gleam of fire by night, the phenomena being interrupted in an orderly way by the interposition of screens of deer hide. But beacon

fires in this country seem to have been alarms simply, and as such were employed in historic times, notably when the descent of the Spanish Armada was daily anticipated. The firing of the beacons has often furnished a stirring theme for the historian and the poet.

The first attempt in this country to improve Telegraphy seems to have been made by the Rev. J. Gamble. His apparatus was constructed of five boards, arranged as shutters. This, however, was soon after superseded by a somewhat different plan, submitted to the Admiralty in 1795 by Lord George Murray, and adopted between London and Dover in the following year. This consisted of six shutters, arranged in two vertical rows with an interval space, in which worked the ropes and pulleys which controlled the shutters. This plan was modified in 1805 by Davis, who adapted to the frame signal lights for use by night. His idea was, however, not generally carried out, certainly not in Dorset, I believe. The ball once set going, numerous were the inventions for increasing the efficiency of the instrument ; but as they mostly added to the complexity of the arrangement they were not often adopted. In fact, all the shutter machines were in 1816 superseded by the Semaphore of Sir Home Popham, which consisted of a simple mast with two moveable arms. The use of this was continued until December 31st, 1847, when it gave place to that necessity of modern society — the Electric Telegraph. The Semaphore is still found useful on board ship, especially when fleets are lying in a roadstead and there is not wind enough to extend a flag.

Of the original Murray Telegraph, such as surmounted so many of our Dorset hills, I fortunately found a contemporaneous drawing, which I have the honour to exhibit to the Club. It represents the erection which in my grandfather's time (he occupied the home farm at Minterne) stood on High Stoy. The shutters are painted black with a white spot (or possibly open space) in the centre, and for rapidity of working are divided into three. Ropes attached to the cranks which actuate the shutters pass through the

roof of the building to the operating room underneath. It is, I have no doubt, a correct representation of the official Telegraph which is known to have stood on the knap of Wyke Regis, on High Stoy, and on Blandford Race-down, probably also on a dozen other sites in the county. At the back of the drawing will be found a diagram showing the number of changes that might be made by displaying all the shutters simultaneously, some being vertical, and therefore visible, the others horizontal, and presenting only a thin edge to the sight, practically invisible. The number of changes obtainable is 63, which would suffice for the letters of the alphabet, the numerals, and certain commonly recurring words and phrases. Considering how much the work was influenced by atmospheric conditions we should not be far wrong, I imagine, in including "Repeat last signal" among the said phrases.

The Telegraph Station was occupied by an officer and two men, one of whom was always on duty marching backwards and forwards in the instrument room, applying his eye alternately to the fixed telescopes directed to the stations right and left of him. At night there was nothing to do beyond watching for the beacon fire, provision for which was made by having ready adjacent a large stack of firewood for immediate kindling. The rapidity of the shutter Telegraph attained very respectable proportions. As many as six signals could be transmitted per minute, and with the Semaphore it is said that the dropping of the time ball at Greenwich could be signalled to Portsmouth and back again in 45sec. This was, of course, simply indicated by the dropping of an arm. The shutter Telegraph was equally well adapted for cypher correspondence, and it is presumable that for ordinary use spelling was distinguished rather by brevity than correctness. Its range was limited to 10 or 12 miles either way. There was a difficulty often experienced in inducing the shutters to remain in the position required. The wind, when high, would very much impede operations and induce mistakes. This was observed by Henry Ward, of Blandford, when watching the working of the Telegraph on the Race-down. Being a man of singular inventive

faculty (he obtained several valuable medals, as well as money prizes, from the Society of Arts) he speedily devised a method of overcoming the difficulty. It consisted of a spring clutch, which firmly held the shutter in either of its two positions, vertical or horizontal.

His letter, dated Blandford, April 20th, 1807, was addressed to C. Taylor, M.D. Sec. (Soc. of Arts), and is as follows :—

“SIR,—Being one day at the Telegraph on the Blandford Station I observed a great inconvenience attend the working of it in windy weather, and many errors occasioned in consequence. I have since made a model of a crank which will perfectly remedy these defects, and have herewith sent the model for the inspection of the Society, trusting it will meet with their approbation.”

The result was a memorandum to the following effect :—“Ten guineas were this session (1808) presented to Mr. Henry Ward, of Blandford, in Dorsetshire, for a crank useful in working Telegraphs. The following communications were received from him : an engraving (one shutter) is annexed, and a complete model is preserved in the Society’s Repository.”

It would be interesting to ascertain if this model is still in existence. The plan, a full description of which is given in the 26th vol. (1808) of the Society’s journal, pp. 207-8, seems both simple and effective, and one not unlikely to be useful for other similar purposes.

In conclusion might I venture to ask my fellow members of the Dorset Field Club to kindly send to me the names of the sites of any old Telegraph Stations that might have existed in their neighbourhood. The efforts I have made by correspondence and by the insertion of a query in our local “Notes and Queries” have not hitherto been productive of useful result. Such a list, if furnished, might well form a footnote to this short and imperfect paper.

Since the publication of my paper in the local journals I have been favoured with several letters on the subject. That from

Dr. Wake Smart I have permission to print *in extenso*, and, thinking it of great interest and importance, I venture to run the risk of its overwhelming the original communication. He writes :—

“CRANBORNE,

“MARCH 13TH, 1890.

“DEAR SIR,

“I read your paper on Telegraphy as reported in the *D.C.C.* with much interest, and am able, I think, to give you some information from my own observations. Your mention of “High Stoy” reminded me forcibly of a visit I paid to that Telegraph Station in or about the year 1816 when a youngster *in statu pupillari* under the Rev. John Davis, Vicar of Cerne Abbas, one very fine summer afternoon with Mr. Davis. I believe the real object of the visit was that I might see the magnificent prospect from that high land over the Vale of Blackmore and part of Somerset, for the extensive and charming views from some of the Cerne hills always delighted and fascinated my young mind. But we also called on the Lieutenant in charge of the Station, his name I forget, who received us kindly and interested me very much by showing the way of managing the signals by acting on the shutters above by means of cords within, and he, by improvising a short friendly message to his next neighbour, whose Station was, I believe, at Toller, and, receiving his answer, showed us how the Telegraph was worked. It was altogether a delightful visit which time has not effaced from my memory. I believe that at this time there was a continuous line of Telegraphs on Murray’s system from Plymouth to Portsmouth. I am unable to carry the line through Dorset westward farther than Toller; but, to the north, High Stoy commanded a Station on the hills above Melcombe Horsey, from thence to Belchallwell, above Shillingstone, on Bullbarrow. Thence the line turned eastward to Blandford Race-down to the Station above Launceston, thence to Chalbury Hill; thence to Alderholt Common, which brought it to the Dorset County bounds, and from thence it ran through the New Forest, where I cannot follow farther than Bramshaw. If there were another Station intermediate with this and Alderholt I am unable to say. All these Telegraphs in Dorset were worked in the same manner on the shutter principle, and there never was any change made to another system. From my own observation and enquiries I have made I believe that this Telegraph system was worked to about the year 1825, and we may say that the Telegraphs on our

Dorset line were dismantled between 60 and 70 years ago. This date, 1825, would be ten years after the Battle of Waterloo and after the termination of our war with France. After this period they had become comparatively useless.

“ Yours faithfully,

“ T. W. WAKE SMART.”

Mr. R. S. Hine (of Beaminster) writes : “ I have often heard my grandfather speak of the different signal posts erected near Beaminster. One was placed on Beaminster Down and one on Lambert's Castle Hill, and I rather think one on either Lewesdon Hill or Pilsdon Pen.”

Mr. E. Stanhope Rodd gives confirmatory evidence as to Lambert's Castle.

Mr. C. W. Dale thinks the line ran from Lewesdon to Nettlecombe Tout, High Stoy, Bull Barrow, Hambledon, Dencliffe, &c.

That the line was mainly intended for connecting Plymouth, Portsmouth, and London is rendered probable by the failure to detect any Telegraph Station in Portland, where the Rev. R. R. Waugh has made careful enquiries. His informant, an old Coastguard of 90, stated “ That he never heard of a wooden Telegraph on the Verne or at the Bill, and he thinks he must have done so had such ever existed, especially as they had a Coastguard Station on the Verne when he first came to the island. The station was an old house—not a residence—for all the men were billeted in those days. They had a small cannon at the Verne house, which they used for signalling, &c. Before the lighthouses were built fires were used to warn and guide mariners. He remembered seeing some of the ironwork used for the signal fires.” This, however, is not quite conclusive, as the old man's acquaintance with Portland commenced only 50 years ago, some 10 or 20 years after the system was superseded. There is no doubt about the Wyke Station, as the field in which it stood bears the name to this day ; moreover, it is difficult to imagine that so excellent an outlook as that from Portland Bill and the Verne

could have been ignored. Still it is possible for Wyke to have had a merely local importance, and so far the Station has not been connected with the line we have succeeded in tracing through the country.





Holme Priory.

By THOMAS BOND, Esq.



PREVIOUS to the publication of the Third Edition of "Hutchins's History of Dorset" nothing whatever was known of the early history of East Holme,* or when or by whom the Priory there was founded. Hutchins says "When or by whom the Priory was founded is uncertain," and both Dugdale and Tanner are equally silent. In editing the account of the Isle of Purbeck in the last edition of Hutchins, I suggested that the founder of the Priory was in all probability one of the family of De Lincoln, because I found in an extent of the Manor of Holme in the 9th of Ed. I. that the Prior of Montacute held the Church and Manor of Holn subject to the charge of maintaining four monks at that place to chant for the souls of Alured de Lincoln and his progenitors.

It has lately come to my knowledge that Trinity College, Oxford, is in possession of a cartulary of the Priory of Montacute containing charters relating to Holme. They are of the greatest interest, as they give a clear account both of the early history of the Manor and also of the foundation of the Priory. I have, therefore, obtained transcripts of them, and they are given *in extenso* below.

* This is a modern name. Anciently the name was invariably written Holne or Holn.

East Holme seems to be identical with the one hide at Holne held at the Domesday survey by Edric, one of the King's Thanes who also held the adjoining lands of Rushton and Stoke. Not very long after this Holme became the property of a certain "Grimaldus Medicus," who sold it to Alured de Lincoln. The first of the following charters is a license from King Henry I. to the purchaser to hold the same ("Terra de Holna") in fee. Amongst the witnesses, besides Roger, Bishop of Salisbury, who obtained that see in 1102, are Ranulph the Chancellor and William de Tancervilla. The former was Chancellor in 1112, and he again occurs as such between 1109 and 1111, and also in 1121. The latter was witness to a Royal charter in 1121. The date of this charter was probably, therefore, about that time.

The second instrument hereafter given is the charter of foundation of Holme Priory by Robert de Lincoln, son of Alured above mentioned. It states that he had been moved by Divine instinct to found a house of religion in honour of God; and with the concurrence of Beuza, his wife, and Alured, his son, for the souls of King Henry and of himself, his father, mother, wife, children, relations, and friends, he gave to the monks of Montacute the land called Holna for the support of 13 monks at the latter place. He also gave them three virgates of land with the tithe thereof at Wrde (Weston Worth in Purbeck) and the tithe of all the bread, meat, and fish of the buttery (*dispensa*), of the house, of himself, his heirs, and successors (meaning all provisions of the kind mentioned provided for the use of his household); also one of the salt pans of the salt works adjacent to the Manor of Langton.* The tithe of the demesne at Acford (Okeford Fitzpaine), and of Winterburne Gurewambe (Winterbourne Whitechurch), and of Langton juxta Abotesberie (Langton Herring), and of Corfton (Corton, in Portesham). At the same time Bardulphus, his knight, with the consent of himself and of Alured his son, gave the tithe of the demesne of Chiselburnford and Watercumbe.

* These salt works were at Middlebere on the Poole estuary, but were within the Manor of Langton Wallis.

The precise date of this charter cannot be proved, but it was certainly anterior to the 12th of Henry II., as in that year Alured de Lincoln, son of Robert, was in possession of the barony, and made a return of his knight's fees for which he was assessed for the great aid.

The third charter is a confirmation by Alured, son of Robert de Lincoln, of the gift of his father and Beuza, his mother, to which he adds the tithe of a garden at Bradle and of his salt works in Purbeck; also the tithe of Plys (Plush, in Buckland Abbas), together with his rights of common there for ten oxen, one heifer, and 250 sheep feeding with the cattle of the Abbot of Glastonbury. And he declares that the monks shall have the tithe of the bread, meat, and fish of the buttery of himself, his heirs, and successors in any way holding the lands wherever they shall be dwelling in England. He also confirms to the same monks the Church of Warmwell, which had been given them by his man Gunfredus and Gaufridus his son. The premises were to be held subject to no service besides prayers and Divine offices for the souls of the ancestors and successors of Robert de Lincoln and of all faithful deceased.

The first Alured de Lincoln has been supposed to be identical with one of the same name who had a great estate in Lincolnshire at the Domesday survey; but this seems very doubtful, although it can hardly be questioned that both (if they were not identical) were of the same family. The Dorset Alured or his successors are found in possession of the greatest part, if not of the whole, of the extensive barony which, at the Domesday survey, was held by the widow of Hugh FitzGrip, and there are very strong grounds for believing that Alured de Lincoln obtained it by marrying the wealthy heiress. Robert de Lincoln, the founder of Holme Priory, was conspicuous as a supporter of the Empress Matilda on the breaking out of the war with King Stephen, and in 1138 he seized the town and castle of Wareham in her behalf.

It is needless to occupy space by recounting the subsequent history of Holme and its Priory, because it may be found in detail

in the Third Edition of Hutchins. I will, therefore, only further remark that the monks of Montacute were not very faithful trustees, for, though the founder provided for the maintenance of 13 monks in the cell of Holne, only two were resident there when Leland wrote. The picturesque figures of the "Holy Friars" are no longer seen at Holme. Requiems have ceased to be repeated there and the de Lincolns have been forgotten. The ancient church, which was the church of the parish, has been long since swept away. But the inhabitants in our own day are fortunate in having had a landlord more careful of their living souls than the monks of Montacute seem to have been of the souls and wishes of their deceased benefactors. Mr. Bond, the present owner of Creech Grange, during his tenure of the property at Holme, rebuilt the church at his own expense and endowed it with the tithes of the parish, which had been impropriated by the monks of Montacute to their own use. Some of the Norman arches, which are no doubt contemporary with the foundation of the monastery, now decorate the chapel at Creech Grange, having been removed thither in 1726 by Mr. Denis Bond, who built the chapel out of the remains of the Priory Church.

Carta Henrici I. de concessione terre de Holna.

H. Rex Anglie Rogero Episcopo Sarisburie et Warino vicecomite et omnibus baronibus francis et Anglis de Dorseta salutem. Sciatis quod concedo Aluredo de Lincolnia habere in feodo terram de Holna sicut ei vendidit Grimaldus medicus. T Rogero Episcopo Sarisburie et Ran. Cancellario et Will. Tancvilla et Johe Baioc. Apud Wyntoniam.

Carta Roberti de Lincolnia de donatione terre que dicitur Holne ad inhabitandum et monachos ibidem constituendum et sustinendum.

Sciant presentes et futuri quod ego Robertus de Lincolnia instinctu divino provocatus domum religionis in honorem Dei construere disponens, dono Deo et ecclesie sancti Petri de Monte acuto et monachis ibidem Deo servientibus terram meam que dicitur Holna in elemosinam perpetuo duraturam quatenus ibi ordo et religio monastici ordinis tresdecim videlicet monachorum habeatur, cum Deus omnipotens res et substantiam per me vel per heredes meos monasterio predicto contulerit. Hanc

donationem episcopi Sarisburiensis consilio et consensu fecimus ego et uxor mea Beuza et filius meus Aluredus presente Priore et Monachis Montis acuti et dompno Gillberto Monacho cui ego personaliter antea locum ipsum dederam et aliis, videlicet Willelmo de Lundonia Waltero atque Ricardo. Hoc itaque feci pro anima domini mei regis Henrici et pro animabus patris mei et matris mee et omnium parentum meorum, necnon et pro salute anime mee et uxoris mee filiorum meorum et parentum meorum et amicorum. Dono etiam predictis monachis tres virgatas terre in Wrde et decimam partem panis carniurn et piscium de dispensa domus mee et heredum meorum et unam salinam de salinis meis ad manerium meum de Langetona adiacentibus cum omnibus ad eandem necessariis, Similiter autem et decimam de dominio meo de Acford totam integre et de Winterburne Gurewambe et de Langetona iuxta Abotesbire et de Corftona, necnon et decimam trium virgatarum de dominio de Wrde supradictarum quas eis dedi. Bardulphus eciam miles meus assensu meo et Aluredi filii mei dedit eis totam decimam domini de Chiselburneford et de Watercumb. Hiis testibus Roberto Germano Bardulpho Bussel et Gervasio fratre eius et multis aliis.

Carta Aluredi de Lincolnia filii dicti Roberti de donatione concessione et confirmatione domuum dicti Roberti cum sua donatione omnium decimarum panis carniurn et piscium de dispensa domus sue et heredum suorum ubicumque moram fecerint cum decima salinarum de Purbic et pluribus aliis hic contentis.

Ego Aluredus de Lincolnia pro amore Dei et salute anime mee et uxoris mee Albrede at pro anima patris mei Roberti de Lincolnia et pro animabus liberorum meorum et heredum meorum omniumque parentum et amicorum meorum Deo et Beate Marie et Sanctis apostolis Petro et Paulo de Monte acuto et Monachis ibidem Deo servientibus in puram liberam et perpetuam elemosinam dono et concedo et confirmo eiusdem patris mei et domine Beuze matris mee elemosinam scilicet ecclesiam et locum de Holna cum terra et omnibus appendiciis suis ipsumque locum cum omnibus aliis appendiciis suis volo esse liberum et quietum ab omni consuetudine et servicio seculari tanquam liberam puram et perpetuam elemosinam. Dono eciam et concedo pro mee et heredibus meis et omnibus successoribus terras meas quocumque modo habentibus in liberam puram et perpetuam elemosinam prefatis monachis ad sustentationem eorundem apud Holnam commorantium omnem decimam panis carniurn et piscium de dispensa domus mee at heredum meorum omniumque successorum quocumque modo terras meas habentium ubicumque in Anglia ego et heredes mei et successores sicut dictum est moram fecerimus; et

decimam salis mei de salinis meis in Purbeke et heredum meorum et successorum inperpetuum. Dono insuper eisdem Monachis Deo servientibus tres virgatas terre in Wrde cum omnibus appendiciis suis que fuerunt de dominio patris mei et decimas earundem, terram eciam de Plys et pasturam decem boum et unius affri et ducentarum ovium et dimidium pascentium ubique in Plys cum bobus et ovibus et aliis animalibus Abbatis Glastonie cum omni iure et consuetudine ad predictam terram appendentibus, et omnem decimam integram domini mei de Acford et de Winterburne Gurewambe et de Langtona que est prope Abbotisbire et de Corftona, et decimam gardini que est prope Bradele, similiter totam decimam integram domini de Chiselburneforde et de Watercumbe quam Bardulphus Bussel miles meus patre meo et me concedente predicto loco in elemosinam contulit. Et ecclesiam de Wermewell quam homo meus Gunfridus me concedente et Gaufrido filio suo audiente et concedente sepedicti loci de Holna fratribus, in elemosinam reliquit et concessit. Omnia autem predicta dono et concedo et confirmo prefatis monachis pro me et heredibus meis et omnibus successoribus terras meas quocumque modo habentibus in perpetuum. Et volo quod dicti monachi omnia supradicta bene et in pace habeant et in perpetuum sine diminutione recipiant et teneant tanquam liberam puram et perpetuam elemosinam nichil inde futuris temporibus faciendo nisi orationes et divina servicia pro animabus omnium antecessorum meorum et successorum et omnium fidelium defunctorum. Et ut hec mea donatio et concessio rata sit inperpetuum attestatione sigilli mei presentem cartam communio et corroboro. Hiis testibus Andrea fratre meo Samson de Lincolnia, Roberto de Bosco Roberto de Antiochia Petro fratre meo Willelmo malo clerico Rogero Capellano meo et multis aliis.



Castle Hill, Cranborne.

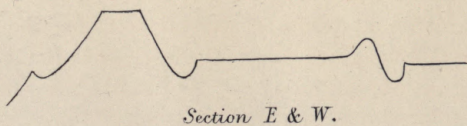
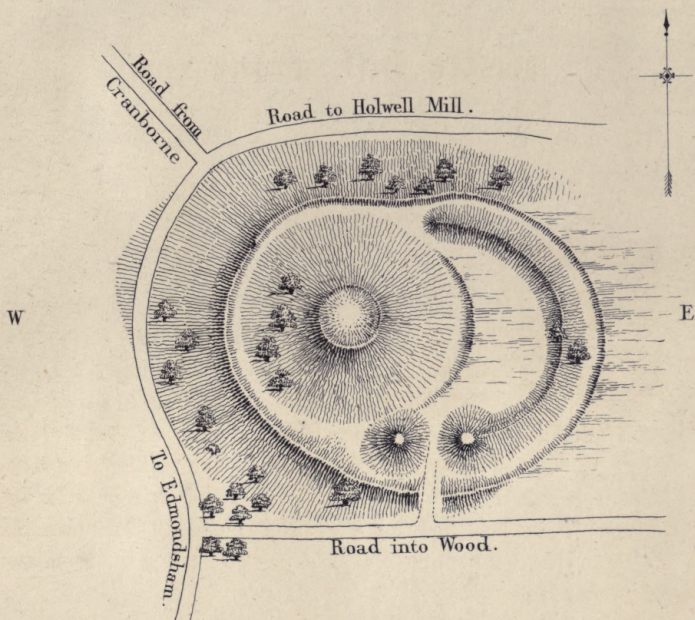
By Dr. WAKE SMART.



HIS may be remembered as the title of a Paper in vol. iv., p. 135, "Proceedings" of the Field Club, by the Rev. W. Barnes. Unhappily too long I deferred the intention of offering a few critical remarks on this Paper, and, as I still feel the necessity of discharging that self-imposed task, I shall do it in no other spirit than that of sincere respect for the memory of our lamented friend, whilst I venture to differ from him in the conclusion he arrived at in his views relating to this matter of antiquarian enquiry.

This gentleman says :—"I believe . . . that the so-called Cranborne Castle was a British *Cor*, with its Court Mound, and that it was the Court of Common Law of the British Hundred (*Cantrev*) of Cranborne. It is very likely that the Saxons and later English used the British Court Mounds for Hundreds' Courts ; and I should be thankful to any fellow-member of the Club who might know that any Constable was wont to hold or proclaim the Hundreds' Court at any old earthwork.* He classifies this earthwork with

* Hutchins, ed. 3, vol. iv., p. 1. "*Modbury Hundred*, and takes its name from a Barrow called *Modbury* on the hill N.E. of Cattistock, between that and Cerne, where the Hundred Court was formerly kept." . . . (The Court is now held at Cattistock.) In a note below the Editors say :—"Is not this (*Modbury*) derived from *Mor beopz*, the hill or barrow of the Meeting or Hundred Court ? The Court was usually opened at Totcombe, and from thence adjourned to Cerne. . . . The Roman Vicinal Way from Dorchester to Ilchester is supposed to have



CASTLE HILL, CRANBORNE.

“the fine *Cor* at Knolton, and with others called ‘the Rounds’ in Cornwall, and with Stonehenge, with the mound at Marlborough, Silbury Hill, and with the Tinwald Hill in the Isle of Man, which is a sample of a ‘*cruc y Gorsedd*’ still in use.” The mound was called the “*cruc y Gorsedd*” (Bench Mound), though the word “*gorsedd* was applied to the Meeting itself as a court, &c.”

Now here we have classed together under the same denomination earthworks of a very different character, but all of them assimilated by the purpose to which they were appropriated, as places of meeting or assembly—*gorsedd*. I do not demur to this definition, for if they were all places of public assembly—a point I have no wish to contest—they would all be spoken of by the Cymri, or those who use the Cymric language, as “*Gorsedd*,” without any distinction as to their constructive characters, which might be very different. I may, however, remark that the “*cruc*,” or mound, is “conspicuous by its absence” in most of the given localities, and it is only the Tinwald Hill that is a “sample of a ‘*cruc y gorsedd*’ still in use.” To this may be added Cranborne Castle as being, in Mr. Barnes’ view, a “*cruc y gorsedd*” of that rare class.

Here, in my humble opinion, a confusion or mistake has arisen in consequence of including all such places, to which the Cymri give the appellation of “*gorsedd*,” as places of Ancient British origin or construction ; whereas the name is simply that by which they are known in the Cymric language. For instance, the Tinwald Hill is not a mound of Celtic construction, but was most probably the work of the Norsemen who preceded the Cymri in its occupation. And so as regards our Castle Hill, it is probably a work of much later date, although the Cymri may give it the appellation of “*cruc y gorsedd*” correctly enough, without any reference to its origin as a British work. I think, then, it is a mistake for us to

passed very near this spot, and was perhaps the ancient boundary between this Parish and Sydling. . . .” *vide* Hutchins, “The Hundreds of Cerne, Totcombe, and Modbury.” [It would be interesting to enquire whether this were an Ancient British mound, sepulchral or not, or a “Moot” mound of Saxon construction ?—W. S.]

give a place-name which is justified only on linguistic grounds and not on any solid foundation.

In the remarks which follow I shall endeavour to shew—

1. That Cranborne Castle is not an earthwork of Ancient British construction ;
2. That it is most probably of Saxon age ;
3. That the traditional name it bears—Castle—is that which is justified by its historic associations and the plan of its construction.

It may be useful to give a brief description of the earthwork before proceeding to further details, for the benefit of those readers who may not be acquainted with, nor have Mr. Warne's *Ancient Dorset* at their command.

CRANBORNE CASTLE

is situated half-a-mile S.E. of the Town, at the extreme end of a high ridge, rising some 200 feet or more above the valley through which the "Crane" stream flows. It presents a steep declivity to N.W. and N., gradually sloping off to the valley on its E. and S.E. sides. The W. and N. sides of the hill are rendered more precipitous by artificial scarping to form a Mound, or Keep, for the defence of the inner works. The E. side is defended by a steep entrenchment of a crescentic form, which helps to give a circular shape to the whole work. On the S.W. this circumvallation is crossed by a narrow bridge, or causeway, formed by filling in the ditch, which gives ingress to the inner area or court of the Castle, and the entrance is defended on either side by a mound, formed by rounding of the break in the rampart, which rises high above the ditch. From this point round the great Mound, or Keep, the ditch becomes shallow and of less importance ; but here the Mound has received additional strength by raising it considerably above the level of the ditch. This part of the Keep is entirely artificial, built up with the sand and pebbles which here abound.

The following measurements were made by Messrs. Warne and Hillier in 1861—viz. :—

Height of the Keep above the shallow ditch ...	...	95ft.
Circumference of the Keep ...	...	560ft.
Depth of Rampart on the E. side ...	...	68ft.
Breadth of the ditch ...	...	20ft.
Height of rampart above the area ...	...	31ft.
Mound flanking the entrance S.E. ...	...	58ft.
Ditto S.W. side, from bottom of ditch ...	...	45ft.

By another measurement I make the total circumference of the ditch to be about 360 yards, and the whole earthwork may be estimated to cover about $2\frac{1}{2}$ acres of land. The area is of small size, being only 45 yards long by 15 yards broad. A shallow ditch separates it from the base of the Keep. There is a way open on the N. side of the area to a spot supposed to be the well, or pond which supplied the Castle.

Nothing like foundations of buildings are known to have been found here; indeed the loose nature of the soil would not be favourable to it. Blocks of pebble-conglomerate are met with here in this stratum. If ever there were buildings of any kind they were of wood, which was usual in important buildings of the Saxon period. The Castle is embowered by trees, but glimpses may be obtained of fine prospects to the Isle of Wight, the Hampshire Coast, Purbeck Hills, &c.

I do not recognise here any evidence of Ancient British construction. The Britons, as a rule, are not known as mound-builders, with the one great exception of their burying places, which certainly manifest a consummate ability in this art. But with this exception of their sepulchral mounds, or tumuli, I know not one specimen of an artificial British mound. The hill-forts of the Britons, often so-called, but which I believe were beacons or signal-posts, are always natural eminences, sometimes of a conical form, which have a limited area on the summit, surrounded with a low bank and ditch.

Then, as regards the deep entrenchments, the Ancient Britons were famous, we know, for work of this kind; but the Saxons were no mean rampart-builders, as we know from Old Sarum and the

earthen walls of Wareham. Looking, then, at this interesting earthwork as a whole, I am fully impressed with the idea of the unity of plan and design of its construction, which cannot be attributed to an earlier age and people than the Saxon proprietors of the soil. This leads me to make a statement in reference to its Saxon origin. It is well known that the Manor of Cranborne was one of the 440 Manors included in that extensive fief of the Saxon age, known as The Honor of Gloucester. Its early Lords were connected with Cranborne. Aylward, grandson of Alfred the Great, is one who may be remembered as founder of the Abbey of Cranborne, in Athelstan's reign ; but he on whose history I wish more particularly to dwell is Brietric (or Brihtric), son of Algar, and grandson of Aylward. This powerful Noble, last of the Royal Saxon line in this part of England, was selected, no doubt, in consequence of his wealth and power, by Edward Confessor to go on a mission to the Court of Baldwin, Earl of Flanders, the purport of which is not known, but was most probably connected with the succession to the throne of England. There he unhappily met the Earl's daughter, Matilda, who, it is said, fell desperately in love with him, which, alas ! he did not reciprocate. Not long after his departure and return to England Duke William of Normandy paid a visit to the Earl of Flanders, and, unlike his predecessor, was so captivated with Matilda's charms as to make her soon his wife. And now the story assumes a tragic interest, for, it is said, that she, soon after her elevation to the throne of England, with burning indignation for the mortification her pride had suffered by Brihtric's indifference, incited her husband to seize on his extensive and rich domains, and to have him confined in Winchester Castle, where death soon ended his misery. This is said to have occurred about the year 1070 (*Chronicle of Tewkesbury* in *Monasticon Angl.*). In him died one of the last great Saxon Nobles, whose possessions fell to the lot of the Conqueror.

Brihtric's name occurs often in Domesday :—"Has terras tenuit Mathildis Regina—Litelfrome—Creneburne—Aisemore (Ashmore), which Brihtric held T.R.E." Again, "Terra Scē Marie Creneburnens

Ipā Ecclā tenet Boveric (Boveridge) ; Brihtric tennit T.R.E.” Here is proof of Saxon Manors of Brihtric granted by William to his Queen Matilda. Still would I charitably hope that the part which has been assigned to her in this tragic story has been exaggerated by the apologists of her husband, who would avail themselves of any plea to shift the onus of rapacity and cruelty upon other shoulders than their patron’s, even at the risk of tarnishing the fair fame of his consort in the estimation of posterity.* We have no evidence of any building here at any period, as I have already stated ; but there can be no doubt that the Hundred and Manorial Courts, the Folkmote of that period, were held here, under the Stewardship of Brictric’s representative. Such assemblies may be correctly denominated “*gorsedd*” by a Cymric speaking people ; but it would by no means follow that the name indicated a Cymric origin to the place or the institution.

I will now proceed to corroborate the views which I hold of the Saxon foundation of this earthwork, by comparison with two other undoubted examples, which will be enough, amongst many other, to illustrate my subject.

LAUGHTON-EN-LE MORTHEN, CY. YORK, W. RIDING.

In the British Arch. Journal, p. 401, 1844, the late Mr. Daniel Haigh, of Leeds, writes :—“There is no mention in the Domesday Survey of the church in this parish, but its importance in the times of our Anglo-Saxon forefathers is proved by the fact there recorded of its having been the residence of Earl Edwin—‘*ibi ten comes Eduin aulaum.*’ W. from the church, about 50 yards distant, are the remains (as I believe them to be) of Edwin’s Hall, consisting of a high circular mound standing between the extremities of a crescent-shaped rampart of earth.” Reading this I was so struck with its resemblance to Castle Hill, that I wrote to Mr. Haigh, who very courteously sent me a sketch of the earthwork, which, to

* “Matilda, a woman who was a singular mirror of prudence in our time and the perfection of virtue.” (Will-Malmesb, B. iii.)

my regret, I cannot find ; but am able to compare it with a ground-plan which is taken from the B. Arch. Journal for September, 1874. It shews a strong typical likeness to our Castle, so that I believe there can be no reasonable doubt of these two earthworks being of about the same date and attributable to the same people. It is most conclusive to be able thus to strengthen one's argument by an appeal to Domesday Survey.* I will now devote a few words to the Saxon owner of this, his residence, castle, or stronghold. Earl Edwin was son of Elgar, and grandson of Leofric, Earl of Mercia, and of his wife Godiva. He, with his brother Morcar, received charge of Northumberland, and they seem to have had a lively time of it in efforts to repel the incursions of Northmen and Danes, who, however, received a fatal defeat in the battle of Stanford Bridge A.D. 1066. Harold II., who married Aldytha, sister of Earl Edwin, and widow of Griffin, King N. Wales, assisted his brother-in-law, Edwin, and Morcar in this battle, and then he hastened to meet William Duke of Normandy, who was landing his hostile forces on the shore of Sussex, where Harold quickly lost both his crown and his life. The Norman invasion soon proved ruinous to Edwin and Morcar. We know the result from the Domesday Survey :—"Earl Edwin had 66 villeins there (Allertonshire), with 35 ploughs ; yearly value, four score pounds. . . There were 116 sokemen . . . now it is waste."† To the same effect W. Malmesbury :—"The resources of this once flourishing Province (York) were cut off by fire, slaughter, and devastation, and the ground for more than 60 miles, totally uncultivated and unproductive, remains bare to the present day." B.iii. The land which had belonged to Edwin and Morcar almost everywhere in the Survey is stated to be *wasta*, as well as numerous

* The earthwork at Laughton is said to be very like the "Chateaux-à-Mottes so common in Normandy, described by M. de Caumont in his *Cours d'Antiquités*. All of them are enclosures more or less circular, protected by ditches and embankments of earth, having within a high circular mound." Exinf. Rev. J. H. Ward, M.A.

† "The Races of Britain," by John Beddoe. C.x.piii. *The Normans in Yorkshire*.

other places belonging to the Archbishop, and Bishops, and others. (Note to W. of M.).

The Conqueror's policy seems to have been the extermination of his foes.

Very little more can be told of the brothers, Edwin and Morcar. The last notice we have of them is in the Saxon Chronicle A. 1071. "This year E. and M. wandered through the woods and fields." Fugitives and outcasts they fled to Ely, then the refuge of the lawless Danes, where Edwin is said to have been slain by the treachery of his own followers.* To me it is an interesting fact that two places comparatively so obscure, as Cranborne and Laughton-en-le-Morthen, and far apart as are Yorkshire and Dorset, should each possess an ancient earthwork, alike in form and construction—memorials at once of a great Dynastic revolution and of its fatal issues to the owners, who were the last of a wealthy, powerful, and royal race of Saxon Nobility.

THE MOOT, DOWNTON, WILTS.

In the Journal of the Archæol. Institute, vol. 32, p. 291, 1875, there is an able paper by G. T. Clark, Esq., F.S.A., "On the Earthworks of the Wiltshire Avon." He has selected, he says, Old Sarum and "The Moot" to represent the British and the English (*Anglo-Saxon*) types, Downton being wholly of the latter class, being thrown up probably "as the chief seat of some great English (*Saxon*) leader ; recently won by the sword and held by his followers, to be the centre of a large private estate, and also to serve as the base of further acquisitions." Downton, he says, has a recorded Saxon history. Here, or in the vicinity, was probably a great fight between the Britons and Saxons, when Cerdic and Cynric, in A. 519, crossed the Avon at Cerdicsford, or Charford, a little below Downton, in their way from the Isle of

* W. of Malmesb., B.iii., A.D. 1103, states that the brothers, after Harold's death, fled to their territories and disturbed the peace of William for several years, infesting the woods with secret robberies, and never coming to an open engagement ; often taken captive, and often released, The fate of Morcar is not clearly stated.

Wight through the New Forest into Wiltshire. The invasion was a successful one, and in the course of the next century the Kingdom of Wessex was so firmly established that Kenwalk, King of the West Saxons,* son of Cyngils, and fifth in descent from Cerdic, having been baptised by Birinus, completed the building of St. Peter's, Winchester, A. 648, and endowed it, amongst other lands, with the Manor of Downton. The Manor continued with the See at the time of Domesday Survey, but there is no mention therein of "The Moot." (Clark, p. 308). It is, however, highly probable that in the early Saxon times the Courts, both of the Hundred and Manor, were held here as in many other Saxon places which still retain the name of "Moot," or "Mote," in this country as well as in France. †

The Moot is a very remarkable earthwork, or series of earthworks, rising above the Avon, which is on the N. side its chief defence. The whole work is decidedly of a defensive character, consisting of lofty and deep entrenchments on the N.E., S., and W. sides, which affect a circular course and cover a space of about five acres. The central part, where an entrenchment takes a horse-shoe form, is the most important, called by Mr. Clark "the core of the work," being defended by a branch of the river on the West and on the South side by a ditch 250 yards long, broad and deep. The extremities of this horseshoe-shaped rampart are rounded off into mounds, that on the W. being the larger and

* A. 643. This year Kenwalk succeeded to the kingdom of the W. Saxons, and held it 31 years; and Kenwalk commanded the old church at Winchester to be built in the name of St. Peter; and he was the son of Cynegils.

† As "In Scotland the ancient place of assembly was the *Mote hill* at Scone. In the midst of the town of Hawick there is a singular conical mound called the *Moat hill*. We may notice also the names of the *Moot hill* at the eastern end of Lyne bridge; and the *Mote* of the *Mark* in Galloway. On the confines of the Lake District there are hills called *Moutay* and *Caermote*; and there is a *Moot hill* at Naseby, all of which have probably served as the 'Meeting-places of Assemblies.'" P. 33.

(E. T. Stevens, F.S.A., in "Jottings" on the *Moot Excursions* of the Wilts A. and N.H. Society in August, 1876).

See Note to p. 12, *Earthworks in Normandy*.

rising some 70 feet above the river. There are also two or three "Monticules," or small mounds, one of which stands in the space between the ends of the rampart. This area, or space, is not of large extent. In some parts of the work the entrenchment is doubled, but the ground-plan is rendered obscure, not only by the trees and shrubs which enshroud it, but by certain levellings and fillings up, the result of attempts made in the 17th century to Italianise it in the pseudo-classical taste of that period, to the great detriment of its genuine antiquity.*

It would not be difficult to multiply illustrations of this kind, and especially from East Anglia,† but space forbids me. Nor are more required. I have adduced the two preceding examples of Saxon Castrametation, for the purpose expressly of comparison with the earthwork of our Castle Hill, and I presume that an unprejudiced observer will readily perceive a typical identity of constructive design, without an absolute resemblance between them. They shew enough to bring them into the same category as the work of the same people, though not perhaps all of the same date. Yet I am greatly inclined to think that in Laughton, and Cranborne, are seen earthworks which may be of coeval date ; those of the Downton Moot, on the other hand, would seem to be of an earlier period. We have here the same characteristic principles displayed, though somewhat modified in their application, the result of newer experience, or of the exigencies of the site ; still we have the same typical features common to each and to all of the earthworks : artificial mounds, deep and broad entrenchments, notably assuming a crescentic form, and enclosing a comparatively small space of ground, wherein we may well suppose the buildings, if any, were erected—buildings most probably of wood, adapted more for temporary uses, as the holding of Courts and other

* For further particulars of the Manor of Downton see Sir R. C. Hoare's "*Modern Wilts ;*" *Hundred of Downton*, by George Matcham, Esq.

† Ex. gr. The earthworks of the Castles of Rayleigh and Hedingham in Essex. (Strutt).

"The Earthworks of Norfolk," by G. W. Irving, Esq. (Brit. Arch. Assoc. Journal, September, 1858).

popular assemblies, than for permanent habitation. It is manifest, I think, that these earthworks were not intended to be defensive works of a military kind, though in case of emergency, it is easy to conceive, that by palisading and other means the mounds and ramparts might be made eminently defensive.

I shall now bring these remarks to a conclusion, having, as I hope, adduced sufficient evidence in proof of the propositions I advanced :

1. That Cranborne Castle is not an Ancient British work ;
2. That it is most probably a work of a Saxon age ;
3. That the traditional name it bears is fully justified by its historic associations and the plan of its construction.

June 29th, 1889.





Kingston Lacy.

By W. R. BANKES, Esq.



INGSTON LACY HOUSE was built by Sir Ralph Bankes in 1660 within a few yards of the site of and Palace of the West Saxon Kings after designs by Inigo Jones, and having been constructed of red brick was embellished and faced with Caen stone by Sir Charles Barry in 1834.

The staircase from the front hall to the second floor is of pure white Carrara marble. The balustrades are formed of various kinds of rare marble, while the pedestal standing on the landing of the second floor is a remarkable antique.

The life-size bronzes on the staircase are remarkable. The three figures and the siege of Corfe Castle were made by Marochetti, and presented to Mr. Bankes in gratitude for assistance given to Baron Marochetti when a young man and almost unknown. The picture galleries are well known and need slight description. Nearly all of the pictures have been exhibited at Burlington House at various times. Dr. Waagen remarks in his book when speaking of Kingston Lacy "I know no other collection in England containing so many valuable Spanish pictures." One room, decorated with old Cordova leather, is entirely filled with the works of this school, and is called the Golden Room. Amongst the more remarkable pictures is the portrait of the Marchesa Spinola by Rubens,

Zurbaran's *Sancta Justo*, and the portrait of Philip IV. by Velaspez. The ceiling, painted by Paul Veronese, which came originally from the Contarini Palace, is considered by connoisseurs as an exceptional example of its kind in this country. The ceiling, also painted by Giorgione in the year 1510, when he was in the last year of his life, is also remarkable. The two fine examples of Sneyders were taken from Madrid by Buonaparte. The library contains several paintings of the Bankes' family by Sir Peter Lely. Here, too, are the original keys of Corfe Castle. In the drawing room are contained a series of 54 fine enamels on copper, by Bone, of celebrities of the Court of Queen Elizabeth. The miniature of Lord Byron, which he presented to Mr. Bankes while staying at Kingston Lacy, is preserved in this room. In the saloon picture gallery is the *Rafael*, which was originally preserved in the Escorial. On the back of this picture is the brand of King Charles I., and at the top of the carved frame is the head of the painter, and at the angles are the arms of the royal possessors of the picture, with the medallions of their heads, viz. :—1, the Duke Arbino; 2, the Duke of Mantua; 3, King Charles of England; 4, King Philip IV. of Spain. In the dining room are four paintings representing tapestry by Annibal Coracci. The subjects are :—1, "Jupiter Changed into an Eagle;" 2, "Phaeton in a Chariot;" 3, "Hercules and Autacus;" 4, "The Metamorphosis of Neptune into a Sheep." In this room is the celebrated picture of Giorgione of the "Judgment of Solomon." The four carved doors of box wood of this room were copied from the works of Donatello in Padua, and of Sansorine. These were the uninterrupted work of four years. An interesting collection of autographs in four volumes is preserved in the house. Many of these are from the Royal family of various reigns to members of the Bankes' family.

In the grounds stand an obelisk of red Egyptian granite. It was removed from the Isle of Philae, in Upper Egypt, for W. J. Bankes, Esq., under the direction of G. Belzoni, in the year 1819 and placed in its present position. The dimensions of the obelisk

are the following:—The height of 3 plinths in one block, 2ft. 10 inches ; of the lower member of the pedestal, 5ft. ; of the upper member, 2ft. 5 inches ; of the shaft, 23ft. 3½ inches—total height, 33ft. 7½ inches. The spot on which the obelisk now stands was selected by the Duke of Wellington, who laid the foundation stone of it in 1827, and planted most of the Cedar of Lebanon trees on the lawn. The two upper inscriptions on the obelisk are painted in red letters upon the surface ; the lowest is cut in the stone.

The uppermost inscription is much obliterated ; the following is the translation of what remains :—

“
 of the Gods Euergetes
 Gods Epiphanes, of the God Eupator, and of the God
 Philometer, and of the Gods Euergetes greeting. We
 have submitted to you the copy of the letter written
 to Lochus our cousin and General, and we permit
 to you the setting up the monument which you
 apply for
 pacon 22.”

The second inscription contains only the following :—

“ King Ptolemy and Queen Cleopatra
 the sister and Queen Cleopatra the wife
 to Lochus their brother greeting. to us
 from the
 a copy
 you shall make
 not to trouble them
”

The third inscription is as follows :—

“ To King Ptolemy and Queen Cleopatra
 the sister and Queen Cleopatra the wife,
 beneficent Deities, the Priests of the great Goddess
 Isis and Abatus and Philar greeting.
 Whereas those frequenting Philar, as generals
 and Prefects, and governors of Thebes, and
 royal scribes, and prefects of the frontier guards,
 and all other functionaries and constituted

authorities, and the rest who are in office, compel us to make contributions to them against our will, and out of this it results that the temple is deteriorated, and that we are in danger of not having what is appointed for the sacrifices and to be made for you and your children. We request of you, great Deities, as you are if it shall seem good, to order Noumenuis your cousin and Secretary for correspondence to write to Lochus your cousin and general of the Thebaid, not to trouble us in these things, not to suffer any other to do the same, and to give us the necessary decrees to that effect, and in these to permit us to set up a *Monument* on which we may inscribe your kindness to us upon these points that your favour may be perpetuated upon it to all time. When this shall be done we and the temple of Isis shall hold ourselves obliged

Fare ye well."

Not far distant from the obelisk stands a granite sarcophagus, also brought from Egypt, which formerly contained a full length mummy. The bronze lions were discovered during excavations at Herculaneum. The three fine cork trees are of great age, though still in their prime.





On the British Species of Phalangidea or Harvest-Men.

By the Rev. O. PICKARD-CAMBRIDGE, M.A., F.R.S.,
C.M.Z.S., &c., &c.

(PLATES A, B, C, D, E.)



(INTRODUCTION).

THE popular idea of this curious group of the Arachnida is that they are spiders. With the Spiders (*Araneidea*), however, they have only an *Ordinal* affinity, that is (in general terms and omitting details and exceptions) the Harvest Men (or *Phalangidea*) have, in common with spiders, *eight legs* (each of seven main joints), articulated to the inferior side of the fore part of the body, which is composed of the caput and thorax, or *cephalothorax*; and on the upper side of this, more or less in front, the eyes, two in number, and always simple, are placed. They have also, like spiders, in front of the legs, *two leg-like palpi*, of six joints, as well as *two falces*, each consisting of two joints, ending with a moveable claw, which, opposed to a fixed claw of the falx, forms a pair of pinchers, and, in reality, represents a third joint.

When, however, we come to observe the *differences* between Harvest-Men and true Spiders, these are very great and for

the most part easily seen. In the *spiders* the fore part, or cephalothorax, is nearly always visibly distinct from the hinder part, or abdomen, to which it is joined by a distinct pedicle. In the *Harvest-Men* the cephalothorax and abdomen fit close up to each other, and are in fact united throughout their whole breadth, looking, to an ordinary observer, like one homogeneous piece, the division between them being, however, always traceable by a, more or less deep, transverse groove, or indentation. In most *spiders* the abdomen is developed to a much larger size than the cephalothorax, and is always furnished with spinning organs—*spinners*—while that of the *Harvest-Man** has no spinning organs, and, as a rule, appears to have shrunk up and become in many cases as small as it could possibly become; the portions, or segments, of which it consists, especially the three posterior ones, having become contracted or crushed up into each other as though by some strong attraction from in front or pressure from behind. Most people will, no doubt, call to mind one of our most abundant of the *Harvest-Men*, whose little nearly circular body, smaller than a small pea, and poised, as it were, between its exceedingly long, slender, thread-like legs, is thus carried suspended, with great quickness and facility, over the rough grass and herbage of our fields, woods, and hedges in early autumn. This is *Leiobunum rotundum* Latr. (or possibly *L. Blackwallii* Meade)—a closely allied species.

To go on, however, with their differences from spiders. The eyes of all known *British Spiders* are 6 or 8 in number, while those of the *Harvest-Men* are 2 only, and these are placed on the sides of an eminence near the centre of the fore part, or caput, also in spiders the cuticle of the abdomen is *continuous*, while in the *Harvest-Men* it is divided into *transverse segments*, which are often only traceable by a slightly indented line, though sometimes by folds (in the epidermis), showing the pristine division of the abdomen into distinctly divided segments. In the adult male spiders, again, the palpi always end with a congeries of corneous lobes and spines,

* Spinning organs have, however, been discovered in the *Cyphophthalmidæ*, but their use and economy are not known.

used in generation ; but this is never the case in the Harvest-Men, whose palpi, though often varying much in form and development in the two sexes, end similarly in both, with a simple claw ; their method of generation is also totally and remarkably distinct. Again, in *spiders* the basal joints of the legs are articulated to a sternal plate of considerable size, while, though this is represented in the Harvest-Men, it is of quite subsidiary importance and generally difficult to observe ; the extremities of the legs are also subdivided into many minute articulations. These *external* differences are easily observed, and when we come to *internal* ones it will be sufficient here to note one, that is that the respiratory system is simply *tracheal*, and its external orifices quite differently situated from those of the tracheæ and Sac-tracheæ of spiders.

Probably no one who attends fairly to the differences above noted will mistake a Harvest-Man for a spider. Yet it might still be difficult at first sight to distinguish some of them (the *Trogulidæ* for instance) from some of the larger and longer legged *Acarids*, especially some of the family *Trombididæ*, but if it is remembered that the latter never have the abdomen segmented, while that of the Harvest-Man always is so, or at least shews its former separation by transverse lines or grooves, there will be very little chance of confusion. There are, of course, other striking differences between the Order of Mites, or *Acaridea*, and the Harvest-Men, but the one I have mentioned may suffice for our present purpose.

In one of the most recent works upon this order, M. Simon divides Harvest-Men—*Phalangidea* (or according to his terminology, the *Opiliones*) into three sub-orders, based on well marked structural characters ; as, however, all our British species belong to one only, the third—*Opiliones* * "*Plagiostethi*"—there is no need, for our purpose to go into this primary division. The whole group or order *Opiliones* of Mons. Simon is co-extensive with my order *Phalangidea*, which seems to me to be sufficiently sub-divided directly into various *families* without the intervention of *Sub-orders*. This is, however, a question of classification into which it is

* *Plagiostethi* fr. *πλάγιος transverse στήθος* breast (sternum).

scarcely necessary to go here. Our British species, 24 in number, are distributed among three families, *Phalangiidae*, *Nemastomatidae*, and *Trogulidae*, each of which, as well as the British genera and species contained in them, will be characterised in detail further on.

Harvest-men cannot boast of any bright colours ; they are mostly of different shades and mixtures of *white, grey, brown, yellowish, and black*. The sexes may usually be distinguished by the smaller size of its body and by the brighter or clearer markings and colours *in the male*, its longer slenderer legs and their better developed armature, as well as by the development of the falces and palpi. In many cases, unless actually dissected, the sexes, in some groups (*Trogulidae*) are, however, very difficult to distinguish, especially in the immature state.

The trivial name *Harvest-men* has been obtained by the commoner species of the group, probably because they are observed in their *greatest abundance* at the *harvest time*, among the herbage grass and weeds in the hedges and cornfields ; for the same reason no doubt the French call them “*faucheurs*” (reapers). The species thus observed belong to the family *Phalangiidae* and principally to a few species, such as *Phalangium cornutum*, *Liobunum rotundum*, and *L. Blackwallii*, while on bushes and moss-covered trees as well as among herbage in woods *Oligolophus morio* is very common ; and on heaths and chalk downs, under stones, &c., *Phalangium saxatile*.

It is not easy to conjecture why, compared to spiders, there should be so few species of this group in existence. The *European* species do not much exceed fifty, those as yet known of *Great Britain* being, as before observed, only twenty-four. Some are widely distributed and abundant, others very local and rare ; but as so few naturalists pay any attention to them we cannot at present speak with much certainty upon this. Not much is known of their habits. Some may be seen pursuing their way at night on tree trunks, &c., but many are diurnal as well, if not exclusively so. They prey upon small

insects, young * spiders, acarids, myriapods, and even the young of their own kind; on all of these I have myself observed them feeding. They are said to be very thirsty creatures, imbibing water greedily, but on this I have not myself made any observations. They are also possessed of great nervous irritability, and have power to throw off their exceedingly brittle slender legs when laid hold of. The leg thus thrown off moves freely for, sometimes, hours after separation from the body. It is probable that legs thus separated may be renewed, as is the case with spiders, but I do not believe it has been yet proved as a fact. Although some species are very active yet many are slow and clumsy in their movements, especially those species whose habitat is among moss and debris, and which are seldom seen unless carefully searched for. It is supposed that some groups, *Trogulidæ* and *Nemastomatidæ*, live for several years, while the life of the *Phalangidæ* is restricted to one season, but from what facts these conclusions are drawn I know not. Various works, some of great importance, have been written by foreign authors on the Phalangidea, beginning with *Linncæus*. These need not be detailed here. M. Simon refers to all of them in his work on the *French* (or practically *European*) species "*Arachnides de France*," tom. 7, p. 133 et seq., 1879. Two works only, so far as I know, have been published by English authors—that of N. Tulk on the *Anatomy of Phalangium opilio*, Ann. and Mag. N. H. xii. p. 153 (1843), and a paper (to which a short supplement was afterwards added) by R. H. Meade, "*Monograph on the British Species of Phalangidæ or Harvest Men*," Ann. and Mag. N. H., ser. 2, vol xv., pp. 393-416, pl. x. xi. (1855).† The supplement was published in the 3rd ser. of that Magazine, vol. vii., 1861, pp. 1-5 of the same Magazine. In these Mr. Meade describes sixteen species, one of which, *Phalangium canes-*

* Mr. G. C. Bignell, of Plymouth, has lately met with an example of *Liobunum rotundum* which had captured and was devouring an adult female of a species of *Lycosa*.

† To these may be added an account of the "Phalangidea" in Art. on Arachnida, by O. P. Cambridge in Ed. ix. Encyclop. Brit., pp. 277-280, 1875.

cens, is certainly no more than a small, and perhaps local, form of *Phalangium cornutum*; and another, *Phalangium minutum* Meade, appears to be a very doubtful species, leaving *fourteen* only certainly known to be British at that time, To these I am able now to add *nine* others, and I do not doubt but that if these groups were fairly worked, especially along our South-Eastern, Southern, and South-Western Coasts, the twenty-four species here described would be materially added to. In recommending our entomologists to turn a wider attention to the Phalangidea, I may observe that besides being a group of animals of very remarkable details of structure, they have nothing whatever disgusting or objectionable about them, but are particularly interesting and cleanly in their ways and quite inoffensive, possessed of no venom, and doing no injury to man or any of his possessions; rather, on the contrary, by preying upon the insect world, doing him good. Of the twenty-four British Phalangids twenty-one have been found by myself in Dorsetshire, two of the remaining three being Alpine forms, and one a doubtful species.

DESCRIPTIONS OF GENERA AND SPECIES.

CLASS ARACHNIDA.

ORDER PHALANGIDEA (Cambr.) OPILIONES (Sundeval, Simon).

Plate A.

Cephalothorax (consisting of the caput and thorax) forms a single portion on which there are usually grooves, sutures, or impressed lines more or less distinctly marking the segments composing it. In some pristine form no doubt these segments, like those similarly soldered together in the corresponding portion of the true spiders, were separated and free, but in the existing forms the progress of development has crowded them up together, not only to the extent of coalescence, but almost to the obliteration of any trace of their once separate existence.

Abdomen segmented; fitting up and united to the cephalothorax throughout its width, having been evidently acted upon by the same causes as those which crushed up the segment of the thorax into the caput. The segments of the abdomen are not the same

above as below ; usually 8 above and 5 or 6 beneath are traceable. Some of the upper ones are, owing to the crushing up above mentioned, indistinct, and scarcely distinguishable from the thorax. Underneath, the anterior segment is usually prolonged between the basal joints of the legs and forms a quasi-sternum, which we may call the *genital plate*. It covers the genital aperture, which is thus more or less close to the mouth parts. The posterior segment contains the anal aperture.

Eyes two ; usually close together, on an eminence of the caput.

Sternum (properly so called), small and usually hidden beneath the anterior portion of the genital plate ; in front of the sternum is the *labium*, over which on each side extend the maxillæ of the 1st and 2nd pairs of legs, by which it is more or less covered.

Maxillæ. These are differently formed lobes springing from the basal joints of the palpi and two anterior pairs of legs. There are 3 pairs of these, one pair belonging to the palpi and a pair each to the 1st and 2nd pairs of legs. Above the first pair of maxillæ between the falces is a small pointed portion of structure called the *epistoma* apparently designed to close-in the mouth parts above.

Spiracular openings. Two ; one on each side beneath the first abdominal segment, usually concealed by a fold of the epidermis underneath the coxæ of the fourth pair of legs.

Falces. Two ; projecting in front beneath the caput, three-jointed, the 3rd (or extreme) joint forming in opposition to a projection, or prolongation of the second joint, a crab's claw or pinchers, similar to that of the scorpions and chelifers.

Palpi. Two ; close in front of the legs, each consisting of 5 joints, or, counting the basal joint, of which the maxillæ form a portion, 6—i. axillary, ii. humeral, iii. cubital, iv. radial, v. digital, the last ending with a single claw.

Legs, seven-jointed—i. coxal, ii. exinguinal, iii. femoral, iv. genual, v. tibial, vi. metatarsal, vii. tarsal ; the last always more or less minutely subdivided, and ending with one or two, rarely pectinated, claws. On each side of the caput on the margin just above the basal joints of the first pair of legs, is, in most of the *Phalangidea*,

a small oval orifice, called the "lateral pores," often looking like an eye, and formerly considered to be a spiracular opening, but now decided to be the orifices of glands, whose office is as yet undiscovered.

Organs of generation consist, in the *male*, of an intromittent organ or penis, usually withdrawn beneath the external sheath or covering—*genital plate*; that of the *female* being provided with a large corresponding ovipositor capable of protrusion. Like the Araneidea the Phalangidea are oviparous, and also increase in size by successive moultings of the skin.

Three families only—i., *Phalangiidae*; ii., *Nemastomatidae*; iii., *Trogulidae*—are as yet known to be represented in Great Britain, and all three are comprised in Mons. Simon's Sub-order *Opiliones plagiostethi*. Of the other European families—*Sironidae*, *Phalangodidae*, and *Ischyropsalidae*—none have yet been found in Britain.

FAM: I. PHALANGIIDÆ.

In this family the ventral segments are 5 or 6 in number; the first is prolonged into a genital plate between the basal joints of the legs, reaching quite to the mouth parts. Two transverse folds behind the eye-eminence. Eyes near together on an eminence near the middle of the caput; basal joints of the *legs* not soldered together laterally; the *maxillæ* of the second pair always visible.

Palpi elongated, of simple form; digital joint much larger than the radial and ending with a claw. *Epistoma* long-pointed, or triangular.

This family may be subdivided into i., *Sclerosomatinae*, in which the epidermis is chitinous and squamose, and the five anterior segments of the abdomen form with the cephalothorax, a large scutum covering the whole creature, while the 3 posterior segments are distinctly visible, overlapping each other and forming a more or less vertical termination to the abdomen immediately above the anal plate, which last has a small accessory portion on each side of it—no lateral pores. *Epistoma* elongate-pointed. ii., *Phalanginae*. Epidermis simply coriaceous, the upper abdominal

segments traceable, if at all, only by impressed lines or slight furrows. Anal plate without accessory lateral portions; lateral pores on the caput present and conspicuous. *Epistoma* triangular,

SUB-FAMILY I. SCLEROSOMATINÆ.

In this sub-family there is only one genus as yet known in Britain—*Sclerosoma* Luc.

GEN : SCLEROSOMA (Lucas).

HOMALENOTUS (C. Koch and Meade).

Epidermis hard and coriaceous; the division of the cephalothorax and abdomen being distinctly marked by a deep transverse indentation. Cephalothorax pointed before, sides parallel behind, and ending with a strong, vertical, or oblique corneous point or spike. *Falces* very small, upper surface flattened, that of the abdomen slightly convex along the middle, of a somewhat oblong oval form roundly truncated behind and armed with spines or pointed tubercles. *Eye-eminence* small and armed with spines or points, *palpi* short. *Legs* short, moderately strong. 2nd pair longest, but least strong. Metatarsi undivided. Tarsi, 1 and 4, 11-jointed; 2, 18-jointed; 3, 10-jointed.

SCLEROSOMA QUADRIDENTATUM (Cuvier).

Homalenotus quadridentatus (Meade).

Pl. B, fig. 4.

Length from $1\frac{3}{4}$ to 2 lines, its surface covered slightly and roughened with yellowish scales. The colour of this species is yellowish brown; it is often of a deeper and more suffused hue, owing probably to its having been for a longer time in contact with the soil. On the upper side of the abdomen are four rows of black spots, each containing a strong tubercle surmounted by a short pale bluntish tubercular spine. These thus form two nearly parallel, longitudinal, central rows of four each and a sub-marginal row on each side of the same number, but less strong, besides a posterior transverse marginal row of four more almost equally

separated from each other. The hinder margin of the thorax has also some small tubercular spines just behind the ocular eminence ; those on the posterior margin of the abdomen are the largest, and are directed strongly backwards.

The *cephalothorax* has a blackish marginal border interrupted at regular intervals by rather irregular yellow-brown spots. There are also some blackish markings on each side and behind, near the base of the eye-eminence. This eminence is nearer the posterior than the anterior margin, and is armed with several small blunt tubercular spines of different sizes and not (apparently) symmetrically placed ; the fore margin of the caput ends with a long, strong, central, nearly straight, horn-like spine directed forwards, and which is itself sometimes armed with one or more small lateral spines.

Legs 2, 4, 1, 3, the coxal, exinguinal, femoral, and genual joints armed with variously sized bluntish spines, some of those on the coxæ being the strongest ; those on the femora of the first pair are most numerous and regularly arranged, and those on the femora of the second pair the weakest. The tibiæ are quite devoid of armature.

This species is widely distributed in England, but nowhere, so far as I am aware, abundant. I have received it from several parts, and have met with it at most seasons of the year in the Bloxworth district, and in other localities, among moss and at the roots of plants and among decayed vegetable matter in woods and hedges. I have also found it under stones at Portland. Mr. Meade speaks of it as tolerably abundant among moss on the Chalk Hills near Hampden, in Buckinghamshire, in August, 1854, and also as occurring at Brighton. It is sluggish and awkward in its movements.

SCLEROSOMA ROMANUM.

Homalenotus Romanus (L. Koch).

Pl. B, fig. 5.

Length from $1\frac{1}{2}$ to $1\frac{2}{3}$ rds of a line.

This species is nearly allied to the foregoing and its surface similarly squamose, but it may easily be distinguished by its

smaller size and paler colours, though its markings (which are, however, usually more distinct and regular) are similar and the number and position of the abdominal and thoracic tuberculose spines are alike. The whole, however, of this armature is stronger, more abundant, more regular, and more conspicuous. The *tibiæ*, as well as the other joints of the legs, are armed with sharp spines, and the frontal horn has a stronger, nearly circular base. This horn is quite straight, and, in some examples, there is another, curved and of lesser strength issuing immediately beneath it and directed forward and downward. The frontal horn is also more frequently armed with small subsidiary spines than that in *S. quadridentatum*.

The eye-eminence is armed with 5 long spines of equal length, two in front directed forward, one in the middle, vertical, and two behind directed backwards.

The differences above noted will make it easy to be separated from *S. quadridentatum*. It is found in similar situations, but is much rarer than that species. I first met with it in 1878 in Holwell, near Sherborne, and subsequently at Bloxworth and its neighbourhood. I am not aware of its having been found yet in any other British locality.

SUB-FAMILY II. PHALANGINÆ.

For characters of this sub-family see supra p. 170. We have, as yet known, only 5 British genera of this group.

GEN: LIOBUNUM (C. Koch).

Body (cephalothorax and abdomen) very small, nearly round. Epidermis coriaceous. Anterior segments of the abdomen, on the upper side, scarcely distinguishable, especially in the male. No armature on the cephalothorax. *Eye-eminence* small and also unarmed, or if any armature is ever present it consists of exceedingly minute tubercles. *Lateral pores* small and inconspicuous. *Falces* small and with no sexual development in the male. *Genital plate* large. *Legs* very small and slender, *tibiæ* of the second pair

subdivided by immovable or "false" articulations. *Palpi* not very long, simple, and ending with a denticulated claw.

In this genus the result of the crushing up together of the thorax and anterior portions of structure, mouthparts, &c., is very observable, the abdomen and basal joints of the legs appearing to have had it all their own way. Only two species have yet been observed in Britain.

LIQBUNUM ROTUNDUM.

Phalangium rotundum Latr. (1791).

Leiobunus rotundus Meade (1855).

Pl. B, fig. 6.

Length of the female 2 to $2\frac{1}{2}$ lines, of the male $1\frac{1}{2}$ to 2 lines.

The *female* has the cephalothorax and abdomen of a somewhat oblong-oval form, and the epidermis is minutely squamose; it is of a pale brownish-yellow colour, the sides and forepart of the cephalothorax dark brown, and a broad oblong marking (rather broadest behind), on the upper side of the abdomen, as well as the hinder part of the same are also dark brown. The brown marking on the abdomen is spotted with white. The paler markings on the abdomen are often of a bright silvery hue. The legs are of great length and tenuity, their colour is brown, or yellow-brown, of a more or less deep hue according to age. The femora are furnished with minute denticulations. The exinguinal joints are generally of a darker colour than the rest. The eye-eminence is small, situated nearer to the hinder than to the fore extremity of the cephalothorax. It is quite smooth, though with a central longitudinal groove or indentation which separates the eyes; these are each encircled with a dark brown rim. Just below the fore margin of the caput and above the base of the falces, are two small nearly contiguous blunt projecting points. The *male* is much smaller, as well as shorter and rounder in form than the female, and the legs are longer. It is usually of a deep reddish brown colour without any markings traceable, and the legs are also darker coloured.

Generally distributed and found abundantly towards the end of summer and in early autumn in most woody and wild places run-

ing with great swiftness and facility over the herbage. The muscular power of the legs is shown in the manner of progression, of this species especially (but also of some other phalangids), the body being sustained and carried along, poised as it were, between the legs. No doubt the great strength of muscle which enables them to do this is contained in the largely developed coxal joints, which are themselves so strongly united to the cephalothorax. The facility with which this species throws off its legs when meddled with has been mentioned above. I once saw one running with very fair speed and facility having lost all but two legs, an anterior one on one side and a posterior one on the other.

LIOBUNUM BLACKWALLII.

Leiobunus Blackwallii Meade, "Ann. Mag. N. H." 1861.

Pl. B, fig. 7.

This species is nearly allied to *L. rotundum*, but is smaller, the female measuring 2 and the male less than $1\frac{1}{2}$ lines. The legs also, in many examples at any rate, seem to be shorter though even more thread-like; there is, however, certainly often a difference between individuals in respect to the length of the legs. It may easily be distinguished by the dark fore part of the caput being divided longitudinally by a white or pale band running from the fore margin to the eyes; these are also encircled with white rings. The abdomen has a longitudinal dark band on the upper side, but instead of ending in a nearly quadrate form as in *L. rotundum*, its hinder extremity is dilated and extends laterally over the sides. The paler portions of the abdominal markings are in this species also of a silvery hue.

The *male* is less distinctly marked, generally being almost uni-colourous, of a yellow-brown, sometimes reddish, hue, but the characteristic differences from *L. rotundum* may generally be traced.

Although abundant in most seasons in woods and on wild heathy places, I think this species is more local than the former, and I do not remember ever as yet having found the two species on or close to the same spot.

GENUS PHALANGIUM (Linn).

PHALANGIUM (Sim).

PHALANGIUM (Meade).

Cephalothorax furnished with more or less conspicuous spines or denticulations; those in front of the eye-eminence are generally more or less irregularly placed, usually in two rough groups on a ridge on each side of the median line—in no case do any form a distinct transverse line of three on or near to the anterior margin of the caput, as in a subsequent genus *Oligolophus*.

The *Abdomen* has transverse rows of minute denticulations on the upper side corresponding with the different segments, and a central longitudinal boldly-angular dark band, more or less distinctly marked. *Eye-eminence* of moderate size and armed with two rows of sharp tubercles or spine-like teeth, the longitudinal space between them being hollow. *Lateral pores* large, oval, and conspicuous. *Anal plate* small, oval or broader than long, sometimes almost circular. *Genital plate* large, somewhat oblong, and sometimes enlarged at its anterior extremity, which is rounded, or truncated. *Legs* long, moderately strong, 2, 4, 1, 3. The tibiæ are devoid of false joints, but they are present in the metatarsi. The metatarsi, however, of the first pair of legs in one of the British species, *P. saxatile*, are devoid of them. Femora armed with rows of numerous more or less strong spines or denticulæ. The *palpi* end with a non-pectinate claw.

M. Simon remarks on the difficulty of giving distinctive characters of this genus; and indeed it is not easy to differentiate it quite satisfactorily from *Oligolophus** C. Koch, Sim. Mr. Meade included in *Phalangium* a species (*O. morio* = *Phalangium urnigerum* Hermann-Meade) separated from it by M. Simon, while Mr. Meade included in his genus *Opilio* the most of the species included in Simon's genus *Oligolophus*. M. Simon lays but small stress upon what seem to me to be the best marked distinguishing

* Not Dr. Carl L. Koch, of Nuremberg, long since deceased, but Dr. C. Koch, of Frankfort, now, I believe, still living.

characters between *Phalangium* and *Oligolophus*—i.e., the absence (though not invariable) of false joints in the metatarsi of the first pair of legs of the latter and the invariable presence of 3 spines or denticulations in a transverse row on or close to the anterior margin of the caput, in front of the ocular eminence. These spines are not found in either of the three British species included here in *Phalangium*, and their absence will, I believe, be found to be a good distinguishing character from *Oligolophus*. M. Simon remarks that *Oligolophus glacialis* (closely allied to *Oligolophus morio*, and included by him in the same genus), has false joints in these metatarsi, whence he appears to infer the untrustworthiness of this character; but in *O. glacialis* (a species unknown to me) the anterior margin of the caput is not said to have a transverse row of 3 spines or denticulæ on the anterior margin of the caput. I should therefore place this species in *Phalangium*, though at the same time removing *O. morio* from that genus and including it along with Mr. Meade's species of the genus *Opilio*, but under Dr. Koch's name of *Oligolophus*, inasmuch as the name *Opilio* is already in use for the specific name of the type species of *Phalangium*.

PHALANGIUM OPILIO.

Phalangium opilio Linn (1761).

„ *cornutum* Linn (1761).

„ „ Meade (1855).

„ *opilio* Sim. (1879).

Pl. B, fig. 8, and Pl. A, fig. 1—5.

Female; length 3 to 4 lines; male 2 to 3, and even $3\frac{1}{2}$ lines. Colour above of a greyish hue to a brownish yellow (apparently according to age and locality, those in chalky or limestone districts being greyer than others) with a broad, distinctly defined, somewhat tapering, longitudinal, central, strongly angulated dark brown mottled band, usually darkest on the edges and often distinctly margined with whitish or pale yellowish brown. This band is frequently divided longitudinally by a pale stripe. The sides of the abdomen are marked and mottled with brown; the

under side is white or whitish-grey. Each segment of the abdomen has on the upper side a marginal row of minute sharp denticulations, weakest, least regular and conspicuous on the posterior segments; a similar row also edges the posterior margin of the thorax. The lateral edges of the cephalothorax are also armed with sharp tubercles or denticulæ, and a group of the same occupy each side of the central line in front of the eye-eminence, with occasionally a single one in the slightly hollow interval between these groups; others are also found irregularly placed on each side of the cephalothorax. Just in the middle above the *falces*, beneath the anterior margin of the caput, are two small but distinct prominent teeth.

The *eye-eminence* is of moderate size, about equal in length and breadth. The two longitudinal rows of denticulæ with which it is armed are 5-8 in number, and about equal in strength to those on the caput in front of it.

The *falces* are small in this sex, and have a small patch of minute denticulæ on the upper side of the basal joint. The palpi appear to vary in length, in both sexes, but mostly so in the males.

The *legs* have the femora of an angular shape, the angles armed with rows of strong sharp denticulæ. The tibiæ are also angular, and similarly, but much less strongly and conspicuously armed. The metatarsi have generally fewer or more false joints towards their distal ends. The colour of the legs is pale yellowish to yellow-brown.

The genital plate is rather tapering, but slightly widened and curvi-truncate at the fore extremity.

The *male*, besides being smaller and having the abdomen smaller in proportion to the size of the cephalothorax than the female, has the angular dorsal band less well marked and often not traceable. The spiny armature also is stronger, the legs longer and dark coloured, the palpi much longer and the *falces* larger, the second joint being produced at its hinder extremity into a more or less long, strong, pointed and slightly curved horn. The variations in the strength of this horn are remarkable, and are, perhaps,

dependent as well on the age of the individual as on the season. The extremity of the genital plate is wider than in the female and more squarely truncate. The exposed sides of the coxæ of the legs, chiefly of the anterior pairs, are also often furnished with small tuberculous teeth.

This species is abundant and generally distributed in woods, waste grounds, and hedgerows, &c., becoming adult in summer and early autumn. It is the one to which, probably, the trivial name of Harvest-men peculiarly attaches, being most common in harvest time. I find immature individuals of a peculiarly ashy and hoary hue, very common on the grassy flowery flats near the Chesil Beach, Portland, early in the summer, so much so that I have at times suspected them to belong to a distinct species, though I have not yet succeeded in obtaining corresponding adults, which would alone prove either their distinctness, or their identity with the present species. The only adults I have met with there have been of the ordinary *P. opilio* type. I have not, however, had much opportunity for working in that locality during the later summer and autumn seasons.

PHALANGIUM PARIETINUM.

Phalangium parietinum Degeer (1778), Meade (1855).

Pl. B, fig. 9, and Pl. A, fig. 6.

As large or often rather larger than *P. opilio*.

Length of the female 4 to 5 lines, male 3 to 4 lines.

The form of the body in this species is an elongate-oval, the abdomen being pinched in laterally near its fore extremity. The *cephalothorax* is of a yellowish colour mottled with whitish, and the *abdomen* is of a general pale whitish-grey and yellowish and brown mottled appearance, with an indistinct whitish longitudinal central line or mark sometimes present. The under side of the abdomen and the coxal joints of the legs are also more or less spotted and mottled with brown or blackish; the coxal markings are usually elongate. The broad normal angulated band on the upper side of the abdomen is (though sometimes obsolete) usually very faintly marked by being a little darker than the rest of the

surface; the angles, however, are not so sharp nor so well defined, though more numerous, than in *P. opilio*; and it has, besides numerous small whitish points or spots generally more or less well defined upon it, a series of curvi-angular blackish or dusky brown transverse stripes, corresponding with the abdominal segments, which last are also marked by marginal rows of minute denticulæ.

The armature of the cephalothorax is very similar to that of *P. opilio*, but less strong; and whereas in some examples of this latter I have occasionally found a minute denticule in the bare space between the two groups of stronger spines or denticulæ in front of the eye-eminence, I have never seen this in the present species. The *eye-eminence* is small—not so large as in *P. opilio*—and the teeth on its crest are also fewer in number and less strong. The space between the fore-margin of the caput and the base of the falces is devoid of the two prominent teeth characteristic of *P. opilio*.

The *legs* (2, 4, 1, 3) are long, armed as in *P. opilio*, but not so strongly or conspicuously. They are of a yellowish white colour more or less distinctly annulated with yellowish brown. *Falces* small, yellowish white mottled with a deeper hue. *Palpi* moderately long, yellowish white marked with brown, terminating with a simple claw. Genital plate large, slightly tapering but widened at its fore extremity, where it is rounded. The ovipositor of the female is of great length, cylindrical, and bifid at its end; when fully protruded about half of its length from the extremity is thickly annulated by a double series of curvi-angular red-brown distinctly defined markings. Pl. A, fig. 6b.

The *male* is shorter and broader in form than the female. The palpi and falces are stronger, and the armature of the legs is stronger, as also is that on the margins of the abdominal segments. The whole of this sex is of a more uni-colourous hue than the female, being of a general more or less deep yellow-brown colour, palest underneath, and the dark markings on the coxæ of the legs are distinct though not so large.

This species is by no means (in my own experience) as abundant as *P. opilio*—in fact, I have hitherto found it rather scarce. It is usually found on walls in autumn. It may be easily distinguished from *P. opilio* not only by its different habitat but by the distinctness of the abdominal angular band of the latter and the absence of any markings on the coxæ of the legs and under side of the abdomen, and (in the male) by the great development of the 2nd joint of the falces of *P. opilio*.

Mr. Meade comes to the conclusion that the *Phalangium opilio* of Linnæus is identical with this species, whereas M. Simon (like Latreille) considers it to have been identical with *P. cornutum* of that author, and in this I am inclined to agree with M. Simon.

PHALANGIUM SAXATILE.

Opilio saxatilis C. L. Koch (1839 and 1848).

Phalangium saxatile C. L. Koch-Sim. (1879).

Pl. C, fig. 10.

Length of the female $2\frac{1}{2}$ to $3\frac{1}{2}$ lines, of the male $1\frac{3}{4}$ to 2 lines.

This species resembles *P. parietinum* in general form, but is much smaller. Its colour is of an ashy to yellowish-grey, marked and mottled with white, black and yellowish-brown. The abdomen has the normal angulated dark dorsal band, though in some examples it is very indistinctly marked, and scarcely darker than the rest of the surface; it is somewhat tapering, coming to a point just above the anal plate, its angles are more numerous than those in *P. opilio*, but its general pattern is more like that of *P. parietinum*, there being generally, more or less strongly marked, a series of transverse curved dark markings, on each side of the median line, each pair of markings meeting in the centre in a largish white spot. These white spots form a central longitudinal line throughout the abdomen, and sometimes almost run into each other. In some examples, chiefly immature, there is another line of white spots, on each side, on the margin, of the dorsal band. The under side of the abdomen is white, thinly spotted with blackish, and there are also some blackish markings on the coxæ of the legs, the legs being

yellowish white, more or less distinctly and broadly annulated with dark yellow-brown.

The armature of the cephalothorax, abdomen, and legs appears to resemble in its general characters that of *P. parietinum*. It is the strongest in the male.

The *eye-eminence* is small, and placed distinctly nearer to the fore margin of the abdomen than to that of the caput, and nearer in proportion than in *P. parietinum*; the denticulæ on its summit are also fewer and less strong than in that species.

The *male* is of the usual shorter broader form than that of the female; it has the pattern on the abdomen less distinct than in that sex, and is commonly of a more generally suffused yellow-brownish hue. The metatarsi of the first pair of legs are shorter than usual and have no false joints in either sex. The denticulæ on the abdomen of the male are thickly studded in the rows and rather strong, while in the female they are almost obsolete.

This species can scarcely be confounded with either *P. opilio* or *P. parietinum*, being so much smaller and greyer in hue, and with the central longitudinal row of white or yellowish spots on the abdomen always more or less conspicuous. It is found under stones and at the roots and base of herbage. I have met with it abundantly in the Isle of Portland, in Purbeck, and on other parts of the coast district, as well as (less commonly) in woods and hedges and on heaths and downs in the Bloxworth district. It seems to me to be most abundant in the chalk and limestone formations, though by no means confined to them.

PHALANGIUM MINUTUM.

Phalangium minutum Meade (1853).

I have never seen an example of this species, and the types are unfortunately lost. I can, therefore, only give here a transcription of Mr. Meade's characters of it.

Length $\frac{2}{3}$ lines. Body rather short and wide; Cephalothorax large, with a considerable-sized eye-eminence, crested with blunted tubercles. The colour is whitish or yellowish gray. The front

and sides of the thorax are variegated with a few irregular-shaped black spots, and the back of the abdomen is traversed longitudinally with a widish dorsal band having one triangular projection on each side. It is of a dark grey colour, mottled or variegated in a transverse direction with white. The palpi are furnished with a projecting process on the third joint, and together with the legs, which are rather short and stout, are of a yellow or brownish colour.

Mr. Meade was unaware of their locality and doubtful as to their sex, and one example only was adult.

GEN : PLATYBUNUS (C. L. Koch 1839).

MEGABUNUS Meade (1855) ad partem.

Cephalothorax with but few denticulæ ; those on the anterior margin of the caput very small, but some rather strong on the lateral margins ; and, if any, a few less strong on the upper side. *Eye-eminence* large, deeply channelled along the middle and surmounted by two rows of 8 or more small denticulæ or sharp tubercles in each row.

Lateral pores large.

Palpi armed with spines. The cubital and radial joints are widened at their extremity on the inner side into a more or less strong apophysis.

Falces short, simple in the female ; stronger and often armed with toothlike projections in the male.

Legs long, 2, 4, 1, 3, but not excessively so ; femora furnished with rows of small sharp denticulæ.

The *abdomen* has the normal dark dorsal band tolerably well defined, strongly marked in some instances, but without denticulæ.

Two species only have as yet been found in Britain.

PLATYBUNUS CORNIGER.

Phalangium cornigerum Herm (1804).

Megabunus corniger Meade (1855).

Platybunus corniger Simon (1879).

Pl. C, fig. 11, 12.

Female adult, 3 to $3\frac{1}{2}$ lines, male 2 to $2\frac{1}{2}$.

The *female* is of a dull greyish yellow-brown or clay colour, mottled with a deeper hue and spotted with whitish.

The *abdomen* is smooth and destitute of spines or tubercles ; it has the normal dorsal band darker than the rest, at times slightly reddish brown, tolerably, sometimes very distinctly, marked. This band is broad, slightly tapering, a little angulated on the sides, truncated at the third segment from the hinder extremity or sometimes thence continued indistinctly to the first segment ; it has occasionally a narrow pale marginal line on each side and is marked with numerous pale whitish spots arranged roughly in transverse lines. The underside of the abdomen, and the genital plate, are pale whitish.

The *eye-eminence* is large, about equal in length and breadth, deeply channelled longitudinally at the top, where it has two rows of not very large teeth or sharp spinous tubercles, eight to ten on each side.

The *cephalothorax* has a few very small denticulæ. Two or three of these are placed in an irregular group on each side of the median line in front of the eye-eminence, and occasionally there is one in the centre nearer the fore margin of the caput.

Falces rather long but not very strong.

Palpi moderate in length ; the cubital joint has its inner extremity produced into a projection or apophysis about half the length of the joint and directed forwards ; the same part of the radial joint is also enlarged or very slightly produced. The anterior edge of the humeral joint is armed with strongish pointed tubercles of different sizes, each ending with a small sharp spine and irregularly disposed along the joint.

There are a few very minute spines of the same nature beneath the radial joints.

The *legs* are rather long and slender, 2, 4, 1, 3, and the femora are furnished with minute denticulæ, they are of a dull pale brownish yellow ; the extremity of the tarsi and the tarsal claw are black.

The *male* is of a shorter form and broader in proportion to its length than the female, resembling the female closely in colours and markings, which, however, are generally less well defined. The falces are armed with a strong, prominent, sharp, conical, hornlike protuberance near the extremity towards the outer side and near the articulation of the fang. This, however, is only developed at maturity. The segments of the abdomen in this sex are also unusually well marked on the under side.

This species is abundant in the Bloxworth district, among herbage, and underwood, as well as among dead leaves and moss in woods, becoming adult in spring and early summer. It appears to be widely distributed, at any rate in the South of England, and I have also received it from the North of England and Scotland, as well as from Devonshire from Mr. G. C. Bignell.

PLATYBUNUS TRIANGULARIS.

Opilio triangularis Herbst (1799).

Platybunus denticornis C. L. Koch (1843).

Platybunus triangularis Sim (1879).

Pl. C, fig. 13.

Female, length 2 lines, male $1\frac{1}{2}$ line.

This species is nearly allied to *P. corniger*, which it resembles closely in most of its characters, but may easily be distinguished by its smaller size, and also by its generally more ashy-grey colour. The abdominal dorsal band is dark brown, in general distinct, margined and spotted with white; some of the more conspicuous spots forming two parallel longitudinal rows, two white spots being in a transverse line on each segment. This band is also truncated at the third segment from the end but continued to the anal plate in a diminished and indistinct form, and margined with white. The rest of the upper side and sides are also thickly mottled and spotted with white.

The *eye-eminence* is larger in proportion than in *P. corniger*, and the tubercular denticulæ are shorter and blunter, and usually fewer in number.

The *palpi* have stronger spines or denticulæ than those of *P. corniger*, the stronger ones more symmetrically arranged on the humeral joints ; as well as some nearly as strong on the radial joints at the inner extremity ; also on the humeral joints there are three similar, but smaller, prominent spines directed inwards on a slight protuberance. The apophysis at the inner extremity of the cubital joint is longer in proportion than in *P. corniger*, being about $\frac{2}{3}$ rds the length of the joint itself, while that in *P. corniger* is no more than $\frac{1}{2}$.

The armature on the cephalothorax is similar but less strong than in that species ; and the legs are shorter, and are more or less distinctly annulated with darker or lighter yellowish brown ; the genital plate also is of a shorter more subtriangular form. Young examples are much the most strongly and distinctly marked.

There is but little, if any, difference in colours and marking between the sexes.

I first discovered this pretty little phalangid at Bloxworth in 1878, but the present is, I believe, its first record as a British species. It is tolerably common at most seasons of the year, chiefly at the end of winter and in spring, among grass and leaves, at the roots of herbage and among moss in woods and on heaths in the Bloxworth district. I have also received it from Ventnor in the Isle of Wight, as well as from Ireland, co. Dublin, from G. H. Carpenter, Esq. I have never met with it on low trees and under-wood, situations in which *P. corniger* is frequently found. It is rather sluggish and generally feeble in its motions.

GEN : MEGABUNUS (Meade).

Abdomen without denticulæ.

Cephalothorax armed with longish spines on the lateral margins, and a single prominent one in the centre of the anterior margin of the caput.

Legs 2, 4, 3, 1 moderately long and armed with spines at the extremities of the femoral and genual joints, and also with some spinous tubercles along the coxæ of the 1st pair.

Palpi spinose ; the inner extremity of the cubital joint produced as in *Platybunus* into a strong apophysis.

Eye-eminence very large and armed with a double series of long divergent spines.

Lateral pores large, sub-marginal.

Only one species (*M. insignis*, Meade) is known as yet in Britain.

Mr. Meade included *P. corniger* with it ; it can, however, hardly be doubted but that these two species should be separated generically.

MEGABUNUS INSIGNIS.

Megabunus insignis Meade (1855).

Plate C, Fig. 14.

Length of the *female* from 2 to $2\frac{1}{2}$ lines ; length of the *male* $1\frac{1}{2}$ to 2 lines. The colour of this remarkable species is a whitish, ashy grey, marked with black and yellow-brown.

The normal longitudinal dorsal band on the abdomen is strongly angular, yellowish brown, mottled with whitish grey, and well marked by a strong, though more or less broken, black marginal border. The sides, just at the junction of the upper and under segments, are also strongly, but irregularly, marked with black ; the underside is greyish ashy white, with some broken transverse parallel brown or blackish lines marking the different segments. The upper part of the cephalothorax, in continuation of the abdominal dorsal band, resembles that in colour, and the caput has a distinct submarginal black stripe on each side, just above the lateral pores. There are 3 marginal spines on each side of the cephalothorax, and a single prominent one directed forward in the centre close to the fore margin of the caput. This latter appears to be frequently, but not always, absent in young examples, while in the adult male it is stronger, issuing from a blunt tubercle. The *eye-eminence* is large, with a constricted neck, or pedicle, and surmounted by two rows, 5 in each, of long, strong, divergent, sharp-pointed, tapering spines of equal length. The *legs* are moderately long—2, 4, 3, 1 of a dull yellow-brown hue with paler annulations, which are usually more

conspicuous in immature than in adult examples ; at the anterior extremity, on the upper side, of each of the femoral and genual joints are two strong divergent spines, and there are also some strong spines on the coxal joints of the first pair. Each of the coxæ has a distinct yellow-brown transverse band at its extremity. The metatarsi of the 1st and 3rd pairs are without false articulations—those of the 2nd and 4th have, apparently, each one or two.

The *palpi* are strongly spinous ; the fore extremity of the cubital joint on the inner side is produced into a strong obtuse apophysis, equal, or nearly so, to the joint in length. There is also a lesser apophysis at the anterior extremity, on the same side, of the radial joint. These apophyses are both thickly furnished with short hairs ; at the fore extremity on the inner side of the humeral joint, and, directed inwards, is a somewhat corneous point, or projection, surmounted with small bristles. The colour and markings of the palpi are similar to those of the legs.

The *falces* are small, of a dull yellowish colour, marked with dark yellow-brown.

The male is similar to the female in colours and markings, with only, perhaps, a slight exaggeration of the various characters detailed above ; though, as is usual in this sex, the abdominal segments are more distinctly marked.

I have met with this striking-looking species frequently in the Bloxworth district in the adult state in spring, summer, and early autumn, on the trunks of trees, as well as among moss, and at the base of herbage and among dead *débris*. On several occasions in very early spring I have found it in the immature state in great abundance among heather.

I have also found it under stones in the Isle of Portland, and have received it from various other parts of England ; including Devonshire, from Mr. J. C. Bignell. The late Mr. Blackwall also found it in Wales, and Mr. Meade met with it in Yorkshire, and received it from Ireland, from whence (Co. Dublin) I have likewise had it sent to me by G. H. Carpenter, Esq. It has, therefore, a wide distribution.

M. Simon includes it as synonymic with *M. diadema* Fabr, which he describes and figures as having the fourth spine on the ocular eminence *shorter than the rest*. This, I understand from a correspondence on the point with M. Simon, is a constant character in the species he describes ; while the *equal length* of the spines on the ocular eminence of *M. insignis* Meade is a constant character of the British form. I have never seen the least variation in any one of the numerous adult and immature British examples I have examined. I am strongly, therefore, inclined to believe it to be a distinct species from that of M. Simon, and should expect that, on comparison of the two, some other specific differences would become apparent. I have not, however, had an opportunity yet of comparing them. M. Simon does not appear to attach specific importance to the difference above noted, nor should I do so were it not for its being apparently a constant one.

GEN : OLIGOLOPHUS

C. Koch, Frankfort (1872).

E. Simon (1879).

OPILIO Herbst-Meade (1855), ad partem.

The chief generic distinctions between this genus and *Phalangium* seem to be the presence of three spines or denticulæ of greater or less size in a transverse line on or close to the middle of the anterior margin of the caput ; and the absence of false articulations in the metatarsi of the first pair of legs. In almost every other character there seems to be but little generic difference, though in some species the spiny armature of the cephalothorax and other parts is stronger and more marked. Having adopted the name *Opilio* as Linnaeus' specific name of the type of *Phalangium*, I refrain from using it here as the generic name of the present group, and have adopted the name *Oligolophus* from Dr. C. Koch, who, however, includes in a separate genus—*Opilio*—some species which appear to me to be better included with the rest of his genus *Oligolophus*. Monsieur Simon attaches little importance either to the anterior row of 3 spines on the caput, or to the absence of false articulations in the metatarsi of the first pair of legs, and excludes

from *Oligolophus* a species (*O. spinosus* Bosc. = *Opilio histrix*, Meade), which seems to me certainly to belong to this group, including it in the genus *Acantholophus* C. L. Koch, of which we have not yet found any, at any rate characteristic, species in Great Britain. One of the species included by Mr. Meade in *Phalangium* (*O. morio*—*P. urnigerum* Meade), I have thought it best to include in this genus, differing as it does from *P. opilio*, and others of that genus, in the two distinguishing characters I have above mentioned. (See above under *Phalangium*). As limited here, *Oligolophus* contains nine known British species, one of them *O. agrestis*, Meade, being one of our most abundant Harvest-Men.

OLIGOLOPHUS MORIO, Fabr.

Phalangium morio, Fabr. (1779).

„ *urnigerum* Herm.—Meade (1855).

Oligolophus morio, Fabr.—Sim. (1879).

Pl. C, fig. 15, 16, and Pl. A, fig. 8.

Female length 3 to 4 lines, male 2 to 3 lines.

Female: Colour whitish yellow; dorsal abdominal band strongly and sharply angulated and of a deep brown or blackish hue edged with black and with a narrow white marginal border. Its anterior portion is distinctly continued on the cephalothorax and widening there covers the greater part of it; it is often divided longitudinally by a pale stripe, and tapers to the hinder extremity, which is more or less indistinct. The sides of the abdomen are more or less marked with brown; the under side is unicolorous. The denticulæ on the abdomen are very small and inconspicuous, often more or less absent. Those on the cephalothorax are also small, the three characteristic ones are minute, of equal size, not very close together, in a transverse line near the fore central margin of the caput; behind each of the outer ones of these three are a few others, if anything, smaller and rather irregularly placed; and with the 3 anterior ones form a rough kind of transverse oval or nearly circular figure.

Ocular eminence rather small, surrounded by two rows, each of 5-7 minute teeth or denticulæ, and double (or nearly) the distance

from the fore margin of the caput, that it is from the abdominal division.

The legs are long, 2, 4, 1, 3 moderately strong, dull yellowish, marked and striped or, in parts, suffused with brown. The femora and genuæ are armed with minute spines or denticulæ.

Palpi moderately long, similar to the legs in colour and markings. The extremity of the humeral joint on the inner side is slightly produced and furnished with a tuft of hairs. The cubital and radial joints are strong, and thickly clothed (mostly on the inner side) with short hairs.

Falces moderately long and strong.

The *male* differs much in general appearance and colour from the female. It is of a shorter, more quadrate form; the abdominal dorsal band, including the cephalothorax, is black, as are, more or less, the legs and palpi. This band joins in posteriorly with the black colour of the sides and the other surrounding parts and is often lost in it, though in some (especially the Scotch examples) it is still well defined by a white or yellowish marginal border. The denticulæ on the abdomen are stronger and more conspicuous, forming transverse white rows. Those also on the cephalothorax, eye-eminence, and legs are likewise stronger, and there are a few beneath the tibiæ of the first pair; there are likewise some on the upper side of the anterior extremity of the first joint of the falces as well as at the base of the second joint. The under side, as well as that part of the upper side and sides not suffused with black, are yellowish white, offering a strong contrast in the general appearance.

This species is abundant among grass and other herbage, also on low bushes, underwood, &c., as well as running on tree trunks, and secreted under stones, and appears to be generally distributed. Its usual time of attaining maturity is the summer and autumn. Examples received from near Glasgow and other parts of Scotland were larger and more richly coloured than any I have ever met with in England, the abdominal band being in these deep yellow-brown, pale along the middle, broadly margined with black, and surrounded with a very distinct whitish yellow border; the

denticulæ were also stronger. Although the usual absence of the two small but prominent teeth between the fore margin of the caput and the base of the falces will generally prevent this species being mistaken for *Phalangium opilio*, yet too much stress must not be laid upon this, as I have an undoubted adult male of *O. morio* from Scotland, in which two small adjacent projecting pointed tubercles each terminating with a minute black spine, are plainly visible in the centre of the corresponding space where they are found in *P. opilio*.

Other characters, however, both of colour, markings, and armature, and the difference also of habitat are quite sufficient for the discrimination of the two species.

OLIGOLOPHUS ALPINUS.

Opilio alpinus Herbst (1799).

Oligolophus alpinus Herbst-Simon (1879).

Pl. D, fig. 18.

This species is so nearly allied to the foregoing *O. morio*, that it seems questionable to me whether it be really distinct or not. It resembles it in size, colours, and markings, and most other characters. Mons. Simon says that the *males* are readily distinguishable by the following characters:—"The metatarsi of the third pair of legs are slightly curved, thicker, attenuated at the two extremities, and the tibiæ of the first pair have a series of spines (*spicules*) beneath them, which are always wanting in *O. morio*." I submitted several years since examples from * Scotland, Isle of Arran, &c., to M. Simon; some of these he has determined to be *O. morio* and others *O. alpinus*. With regard to his first distinguishing character, I can find no difference between those thus determined; and, as respects the second distinction, the spicules on the inferior side of the tibiæ of the first pair of legs are equally numerous and strong in all of them, while there are certainly *some*, though few and not so strong, beneath the first tibiæ of undoubted examples of

* Kindly collected for me by my cousin, the late Colonel Pickard, R.A., V.C., &c., at Balmoral, and Mr. H. C. Young, late of Glasgow.

O. morio from my own and other districts in the South of England. With regard to the *females*, M. Simon, while complaining that Drs. Koch and Thorell have given no positive character by which to separate them, confesses that he himself has been no more fortunate in this respect than those authors. As far as I can offer any opinion I suspect that the two species now known as *O. morio* and *O. alpinus*, with another, quite as nearly allied, continental species, *O. palliatus* Latr, embrace a widely dispersed, numerous, and exceedingly variable form, of which those inhabiting the lower and less elevated regions are *O. morio*, while those in the more mountainous or Alpine districts are *O. alpinus* and *O. palliatus*, the two latter presenting an extreme development of colours, markings, and spiny armature, all of which are comparatively less marked and weaker in the plains and lower altitudes than higher up in the mountains. A long series collected in all these different localities, plains, hills, and mountains, would, I suspect, on comparison, prove the above. It is very likely that high up on the mountains the differential characters noted would be found to be sufficiently constant and that the *O. morio* form would be absent, and thus the local form *O. alpinus* would be the established one there; but the difficulty would arise when lower down towards the plains both forms would probably be found gradually intermixing with, and then giving way to, *O. morio*. Pending, however, further research, I have thought it best for the present to include *O. alpinus* as a species recognised by authors, and found on the mountains in Scotland. Pl. D shows three striking varieties of this species.

OLIGOLOPHUS CINERASCENS.

Opilio cinerascens, C. L. Koch (1839).

Oligolophus cinerascens, C. L. Koch—Sim. 1879.

Pl. C, fig. 17.

This species is rather smaller than *O. morio*, the female measuring 3 lines, the male $2\frac{1}{2}$ lines. There will, however, be probably some variation in this as in most of the other allied species. It is very nearly allied to *O. morio*; its colour is greyish

yellow-white. The normal angular band on the abdomen varies in depth of colour, from being hardly distinguishable to dark brown or nearly black, and is most commonly divided longitudinally by a pale or reddish stripe, and bordered with white. The angulation of this band is a little different from that of *O. morio*, and in some examples the ground colour of the upper side is a warm violet-brown, on which oblique lines of white dots are conspicuous, the dorsal band being crossed by three rows of white tubercular denticulæ. These examples, the dorsal band being margined with white, are very handsome.

The armature of the cephalothorax is very similar also to that of *O. morio*, but the denticulæ, especially those in front of the eye-eminence, are, though similarly placed, fewer in number and less in size.

The *eye-eminence* is small, and the teeth or denticulæ on the summit (5—9) are smaller than in *O. morio*. The *legs* are rather short and strong, pale brownish yellow, and devoid of spines or denticulæ.

Examples of this species, which seems to belong to alpine or northern districts, were sent to me from Scotland by Mr. H. C. Young (formerly of Glasgow) and Sir Walter Elliott, and have been examined by Mons. Simon.

The shorter and unarmed legs, and the fewer denticulæ on the caput, will probably render this species more easy to determine than *Oligolophus alpinus*.

OLIGOLOPHUS AGRESTIS.

Opilio agrestis Meade (1855).

Oligolophus ephippiger, Sim. (1879).

Pl. D, fig. 19, and Pl. A, fig. 7.

Female, length, $2\frac{1}{2}$ to $3\frac{3}{4}$ lines; male, 2 lines.

This abundant species is very variable in the colour and depth of its markings. The ground colour is greyish white, often somewhat silvery, and the markings vary from brown to reddish brown, yellowish, black, and grey, and the abdomen is numerously studded

about with white points in somewhat transverse rows ; the normal dorsal band on the abdomen (extending as usual into the thorax) is strongly, but rather obtusely and irregularly angular, brown, yellowish, or reddish, often margined, especially on the fore part, with a more or less broken blackish or deep brown line—frequently this band is only traceable by its dark margins. It is truncated at the 3rd segment from the end, but sometimes indistinctly and brokenly continued. On each side of it, towards the hinder half of the dorsal band, the surface is strongly suffused with dark brown, becoming deeper as it runs back, so as quite to obliterate the margins of the band. The under side is marked and mottled with grey, brownish, and sometimes reddish. The abdomen is smooth and has scarcely any perceptible denticulæ, and those on the cephalothorax are very few and small ; at the centre of the anterior margin of the caput is a group of 7 or 8, of which the three foremost form a transverse line, the middle one being the largest and strongest, in advance of the others, directed slightly forwards, and often with another smaller one just behind it.

The *eye-eminence* is small, of a whitish colour, armed with two rows of very small tubercular denticulæ, few in number, and some, often more or less, obsolete. The *legs* are rather short, yellowish, strongly marked and clouded, but scarcely *annulated*, with brown and reddish brown, furnished with hairs, or fine bristles only—none amounting to spines or denticulæ. Their relative length appears to be 2, 4, 3, 1. The genital plate is somewhat sub-triangular, rounded at the anterior end, in the centre of which is a small circular indentation, looking like a small piece bitten out.

Mons. Simon appears to have concluded this species to be identical with *Opilio tridens* C. L. Koch, but having carefully considered the description and figures given of the latter by Koch, I am convinced the present species is distinct and most probably identical with the *O. ephippiger* of M. Simon. It is in Dorsetshire a very abundant species in woods and on low trees, bushes, heather, and herbage of all kinds, as well as among moss and at roots of herbage, becoming adult in late summer and autumn, ; I have also received it from

many other parts of England, as well as from Scotland. It is closely allied to the next species, *O. tridens* C. L. Koch, but may easily be distinguished by the shorter and more unequal 3 spines on the fore margin of the caput, by its almost unarmed eye-eminence, the less pointed form of the hinder part of the abdomen, and the circular notch at the anterior margin of the genital plate, as well as by its more varied colouring—which in *O. tridens* is of a much more uniform yellow-brown. The latter is also not so common, and is most usually found among moss and herbage in swamps and other wet places.

OLIGOLOPHUS TRIDENS.

Opilio tridens, C. L. Koch (1836).

Oligolophus tridens, C. L. Koch—Sim. (1879).

Pl. D, fig. 23.

Female, length, $2\frac{3}{4}$ to 3 lines ; male, 2 to $2\frac{1}{2}$ lines.

This species, though rather larger, is nearly allied to *O. agrestis* Meade. The general coloration is, however, of a more yellow brown, and the darker portions are often of a richer and deeper bistre-brown, never assuming the varied hues of *O. agrestis*. The cephalothorax is of a more or less completely deep brown colour, which is continued in the normal dorsal band on the abdomen ; this band is scarcely angulated, the sides being nearly parallel, with broken but strong deeper coloured marginal markings, and it does not often extend beyond the truncation at the third segment, the surface between that and the end of the abdomen is often paler than the rest of the ground colour, and very conspicuous. On each side of the dorsal band, towards and at its hinder part, the surface is deeply suffused with dark brown, generally, however, keeping within the longitudinal limits of that part of the band. The posterior part of the abdomen has a rather drawn out or elongated appearance. The Cephalothorax has several distinct spines or denticulæ on its margins. Those on its upper side are also stronger than in *O. agrestis*, the three in a transverse line at the central part of the fore-margin of the caput are longer, more nearly of the same size (though the central one is slightly the

longest); they are also nearer together than in that species and in a straight line, and all three are vertical or very nearly so. The denticulæ (5-6) on the eye-eminence are always present, and quite distinct, though of small size. The abdominal segments are also furnished with transverse rows of minute spines or denticulæ. The *legs* are moderately long, 2, 4, 3, 1, of a brownish-yellow hue marked with reddish brown chiefly in slender longitudinal lines along the angles of the femora, genuæ, and tibiæ. The armature of the legs is very similar to that *O. agrestis*, but is stronger. The genital plate has no notch in the margin of the fore extremity. The *male* is similarly though more richly coloured than the female, but is of a narrower form, and the armature of the different parts is stronger.

This is a tolerably abundant species, at the end of summer and in autumn, among grass, rushes, moss, and débris in damp places, and swamps, in the Bloxworth district, but is not so abundant nor so generally distributed as *O. agrestis*. I have received it from the Cheviot Hills from Mr. James Hardy, also from co. Wicklow, Ireland, from Mr. G. H. Carpenter, and do not doubt but that if it were looked for it would be found very generally distributed, in suitable situations throughout England.

OLIGOLOPHUS PALPINALIS.

Opilio palpinalis Herbst (1799).

Opilio terricola C. L. Koch—Meade (1855).

Pl. D, fig. 20.

Female, length, $2\frac{1}{2}$ to $2\frac{3}{4}$ lines ; male, $1\frac{1}{2}$ to 2 lines.

The general colouring of this species is yellowish brown, with richer-brown markings. The dorsal abdominal band is large, scarcely angulated, but often slightly tapering (behind the constriction near the thorax) towards the end ; it is sometimes almost obsolete ; the three characteristic spines at the middle of the fore margin of the caput are strong, close to each other in a straight transverse line, nearly vertical (slightly directed forwards), the middle one a little longer than the others ; in

one example of the male it was nearly double the length of the middle spine.

The *eye-eminence* is of moderate size, armed with two rows (near to each other) of strongish, rather blunt-pointed, spines, or denticulæ, of which the second from the anterior end is sometimes longer than the rest.

The *legs* are short, of a light yellowish brown colour, annulated with slightly reddish brown, 2, 4, 3, 1, rather slender, furnished with hairs only, except at the fore extremity, on the upper side, of the genuæ and femora, where there are two blunt denticulæ.

The *palpi* are similar in colours to the legs. The humeral, cubital, and radial joints have each of them a small production, or apophysis, clothed with hairs, at the inner extremity, that on the cubital joint being the strongest. These apophyses appear to be stronger in the female than in the male. The outer side, rather in front, of the humeral joint, is armed with a row of 5 strong denticulæ—not all quite equal in length.

The *abdomen* is smooth, without bristles, spines, or denticulæ.

This species may easily be distinguished from the two preceding by the greater length and strength of the armature of the caput, and eye-eminence, and by the armature and other parts of the structure of the palpi. It is also smaller though very similar in colour to *O. tridens* C. L. Koch.

The male, besides being smaller than the female and darker in colour, differs in the greater strength of the 3 anterior spines and those on the eye-eminence.

I have frequently met with this very distinct little phalangid, though not in any abundance, among moss and leaves and at roots of herbage in woods at Bloxworth in October and November for many years past, but, excepting the locality given by Mr. Meade—North Wales—have not received it from any other part of Great Britain.

OLIGOLOPHUS MEADII sp. n.

Pl. D, fig. 21, 22.

Female, length, $1\frac{3}{4}$ lines ; male, 1 line.

The general colouring of this species is pale yellowish on the cephalothorax and legs, but ashy, and sometimes silvery, grey on the abdomen, with greyish brown and darker markings.

The *cephalothorax* is pale dull yellowish with several marginal denticulæ, and there are two parallel marginal brown lines running all round it. The middle of the anterior margin of the caput is armed with the three characteristic spines, near together, in a straight line, and directed forwards; the central spine is at least double the length of the others, and often more. The *eye-eminence* is small, and the denticulæ on its summit also small, though distinct.

The normal dorsal abdominal band is not angulated, and is indicated by (in many cases rather obscure) brown or blackish marginal spots, which are usually strongest posteriorly. Each segment is furnished at its hinder edge with a rather closely studded transverse row of bluntish pointed, strongish white denticulæ, giving the abdomen a very bristly appearance.

The sides are marked with irregular, oblique, grey-brown markings, which also spread more or less over the under side.

The *legs* are moderately long, rather slender, of a dull pale yellowish colour, annulated and clouded with yellow-brown; excepting two small denticulæ at the fore end on the upper side of the femora and genuæ, they are only furnished with hairs at the extremity; on the under side of each coxal joint is a small, but distinct, blackish spot. The *palpi* are similar to the legs in colour and markings.

Some twelve years ago I found several very young examples of this very distinct and pretty species on Bloxworth Heath, but Mons. Simon doubted its specific distinctness. I have, however, frequently met with it since in a more advanced condition, and last autumn, adult, showing no departure, however, from the general characters of the immature examples. Its small size, and grey hue, as also, and particularly, the great disproportion in the relative length of the central and lateral spines on the fore margin of the caput, and the rows of denticulæ on the abdomen, will serve to

render it easily distinguishable from all others known to me as yet.

I have found it frequently, but not abundantly, under old turves and among heather stems and roots on the heath at Bloxworth. It gives me great pleasure to connect this species with the name of my old and earliest instructor on the subject of Spiders and Harvest-Men—Mr. R. H. Meade, of Bradford.

OLIGOLOPHUS EPHIPPIATUS.

Acantholophus ephippiatus C. L. Koch.

Oligolophus vittiger Sim., 1879.

Opilio ephippiatus C. L. Koch (Meade, 1855).

Pl. E, fig. 24.

Female, length, $2\frac{1}{2}$ to $3\frac{1}{2}$ lines ; male, 2 to $2\frac{1}{2}$ lines.

The general colouring of this very distinct species is a cream yellow, minutely marked and spotted with white on the abdomen, the legs being pale yellowish, striped with brown and suffused with yellow brown at the anterior extremities of the femora, genuæ, and tibiæ, giving them an annulated appearance. The fore half of the tibiæ of the first pair are often nearly black. The *cephalothorax* is marked with yellow-brown in continuation of the normal dorsal abdominal band, which is broad, of a rich deep brown, often approaching black, and not angulated, the sides being almost parallel, excepting a slight constriction followed by an enlargement towards the thorax : the posterior extremity of the band is squarely and very distinctly truncated at the third segment, and (but rarely) followed by one or two brown spots towards the extremity of the abdomen. On the anterior margin of the caput, in the centre, is an eminence on which are the three characteristic spines, or strong denticulæ, in a transverse line, near together, of equal length, rather directed forward, the middle one slightly in advance of the others ; behind these are two others, shorter and of less size. The margins of the cephalothorax are armed with several short spines, or denticulæ. The *eye-eminence* is rather small, and armed on the top with two rows, rather close together, of several

(4 or 5 each), small but distinct denticulæ. The *legs* are rather long and tolerably robust, they have the femora and genuæ armed with minute denticulæ, and at the fore extremity on the upper side of each of the two latter joints are two denticulæ of a larger size. The abdominal segments have a few very minute denticulæ along their posterior margins.

The *palpi* are furnished with numerous coarse hairs, and there are some small blunt denticulæ ending with minute black spines along the fore side of the humeral joint.

The male is smaller, and has the abdominal dorsal band darker and more distinct than the female. The legs also in this sex are longer, and the denticulæ on the different parts rather stronger.

Mr. Meade speaks of this species as abundant in various parts of England and Wales at the roots of grass, meadows, and pastures in summer. I have myself only met with it, though fairly common, among low plants, grass, and herbage in woods at Bloxworth and its neighbourhood at the end of June, and near Hoddesdon in Hertfordshire early in July. That these examples are identical with Mr. Meade's has been proved by comparison with types kindly lent to me by himself.

M. Simon includes Koch's *Acantholophus ephippiatus* (which I feel no doubt is the same as our British form) among the species of *Acantholophus*, not known in France, but I am convinced that *Oligolophus vittiger* Sim. is the same as the species now recorded, and which presents, as far as I can see, no characters to justify its separation from the genus *Oligolophus*.

OLIGOLOPHUS SPINOSUS.

Phalangium spinosum Bosc, 1792.

Opilio histrix Latr (Meade, 1855).

Acantholophus spinosus, Sim., 1879.

Pl. E, fig. 25.

Female, length, $3\frac{1}{2}$ to $4\frac{1}{2}$ lines ; male, 3 lines.

General colour dull brownish-yellow or clay colour, mottled and marked with a paler hue, as well as with different shades of brown.

The margins of the *cephalothorax* are rather strongly and roundly indented, and armed with small tubercles and denticulæ. The centre of the fore part of the caput is raised in a kind of longitudinal ridge, which has at its fore margin three strong denticulæ of equal length close together in a transverse line and directed forwards, behind these are 2—4 very small denticulæ.

The *eye-eminence* is small, and the denticulæ surmounting it are very minute.

The *abdomen* has only a few very minute denticulæ or tubercles on its segments. The dorsal band is distinct, of a darker hue than the rest, and bordered with strongish marginal spots or irregular blotches of brown to blackish, it is slightly angular in the middle, constricted just behind the thorax, and abruptly and squarely truncated at its posterior extremity. At the fore extremity it runs on to the thorax, but not very distinctly. In the abdominal pattern there is a strong resemblance to *O. ephippiatus*, which is, however, a very much smaller species.

The *legs* are rather short, 2, 4, 1, 3, tolerably strong, of a dull brownish-yellow hue mottled with whitish and somewhat obscurely annulated with reddish brown. They appear to be furnished with minute hairs, but are quite destitute of armature, except the ex-inguinal joints, which are furnished with small tubercles or blunt denticulæ.

Palpi short, rather strong; the cubital joint is considerably shorter than the radial.

This is a rare species in Great Britain. I have found it at Hursley, near Winchester, and at Corfe Castle, Dorset, and have received it from Isleworth (from Mr. Fenn), also from Gloucestershire, and one or two other localities. It appears to be restricted to chalk or lime-stone districts. Mr. Meade received it from Leicestershire. Its size as well as the greater strength and forward direction of the three characteristic spines on the fore-margin of the caput will serve to distinguish it at once from all our other known species.

Following Dr. L. Koch, Mons. Simon included this species in the genus *Acantholophus*, but I can find no good characters by

which to distinguish it from *Oligolophus*. The name *Acantholophus* would be in any case quite a misnomer even if the genus to which this species belonged were distinct from *Oligolophus*, inasmuch as the eye-eminence is surmounted by only very minute spines or denticulæ, far less conspicuous in fact than in some others of the genus *Oligolophus*.

FAMILY NEMASTOMATIDÆ.

The cephalothorax has no transverse folds behind the eye-eminence, but is soldered into one piece with the anterior segment of the abdomen. The anal plate is formed of four portions; the coxæ of the legs are free, their anterior edges furnished with rows of denticulæ. The second pair of legs have no maxillæ attached to them. Palpi long, simple, digital joint much shorter than the radial and cubital joints, and without any terminal claw. The small supernumerary joint between the exinguinal joints and femora is wanting.*

Only one genus is known of this family.

GENUS NEMASTOMA, C. Koch (1839).

General form, short oblong-oval. *Eye-eminence* very near the anterior margin of the caput. No lateral pores; *Falces* small. *Epistoma* in form of a sharp pointed or else rounded tubercle.

Palpi at least twice the length of the body. *Legs* in some species long and slender, sometimes excessively so, in others shorter and stronger.

NEMASTOMA LUGUBRE.

Phalangium lugubre, O. F. Muller (1776).

Nemastoma bimaculatum, Fabr. (Meade, 1855).

Pl. E, fig. 26.

Female, length $1\frac{1}{2}$ to 2 lines; male, 1 to $1\frac{1}{2}$ lines.

General colour black or deep blackish-brown, with two conspicuous somewhat oblong, white or cream coloured, often silvery, geminated spots in a transverse line at the hinder margin of the cephalothorax. The cephalothorax is, however, scarcely marked from the abdomen, of which last, in fact, all except the last 3 segments are soldered together.

* See *Addenda*, postea.

The upper side of the abdomen is of a somewhat corneous nature, and has transverse rows of very minute tubercles or granulations, chiefly corresponding with the posterior margins of the different segments.

The *cephalothorax* is also granulose and has a notch in the middle of the fore margin of the caput.

The *eye-eminence* is near the anterior side of the caput, and has no regular crest, but only some very small tubercles.

The *legs* are not very long. They are black or dark brown with rather paler metatarsi and tarsi. Some of the joints are tolerably strong, especially of the first pair. They are furnished sparingly with very fine short hairs, and the bases of the femora are narrowly annulated with yellowish.

The *falces* are small. Those of the male have a strong, blunt process at the extremity of the first joint projecting forward over the second joint. The *palpi* are slender, as long, or nearly so, as the body. The digital joint does not much exceed half the length of the radial, and has no terminal claw. They are furnished with numerous fine but claviform hairs.

Excepting in the structure of the *falces*, the sexes do not differ much.

In one female in my possession the ovipositor was extended, and was as long or longer than the whole body.

This is an abundant species—but rather sluggish—among moss, at the roots of herbage, among dead sticks and other detritus in hedges and woods, as well as under stones and logs, and may be found at all seasons, even during the depth of winter. I have met with it in many parts of England, and in numerous localities in Dorsetshire. It has also been sent to me from Ireland by Mr. G. H. Carpenter.

NEMASTOMA CHRYSOMELAS.

Phalangium chrysomelas, Hermann (1804).

Nemastoma chrysomelas, Meade (1855), Simon (1879).

Pl. E, fig. 27.

Female, length $1\frac{1}{4}$ to $1\frac{1}{2}$ lines; male, 1 line.

General colouring, yellowish brown with richer brown markings, and silvery (sometimes somewhat golden) spots. The form is oval, the eyes are placed at the inner extremities of two somewhat triangular processes extending from the sides of the cephalothorax towards the front and centre where they are raised, with their extremities surmounted by bifid (or sometimes trifid) black or deep brown tubercular prominences or denticulæ forming a double crest above the eyes. The lateral margins of the processes are also studded with similar prominences, as also are the posterior margins of the abdominal segment (which are very distinct) and those of the transverse sutures behind the eyes.

The *falces* are dark brown.

The *legs* are very long, slender, brown, the genuæ darkest, and the extremities of the femora and tibiæ palest, giving the legs a somewhat annulated appearance. The femora have a series varying in number, most numerous on the 4th pair, of narrow pale rings near the middle, giving the appearance of small false joints. The legs are furnished thickly with short hairs; many of these on some of the joints are of the nature of minute denticulæ.

The *palpi* are long and slender, deep brown in colour, and thickly clothed with prominent hairs whose apices are small round pale knobs. The radial joint is rather less than half the length of the cubital.

The *abdomen* is dark yellow-brown above, marked along the centre with a double series of silvery, or pale golden, spots, two on each segment in a transverse line near to each other, though wider apart on the hinder portion of the abdomen. The spots on the anterior segments are often confluent, and sometimes some of the spaces between the abdominal segments are also of a golden hue. The male resembles the female except in being smaller, and having a short strong prominent corneous process at the fore extremity of the first and another at the hinder extremity of the second joint of the falces.

Although it cannot be considered a common species, this very pretty and delicate little phalangid is by no means unfrequent in

the Bloxworth district among dead leaves, moss, and débris in woods and hedges, and I have also found it under stones at Portland. Mr. Meade has met with it near Bradford in Yorkshire, and it has been sent to me from Scotland and Northumberland by Mr. James Hardy, and from Carlisle by the Rev. F. O. P. Cambridge.

FAM. TROGULIDÆ.

Cephalothorax soldered to the abdomen without any furrow behind the eye-eminence ; the abdomen has the greater portion (all except the 3 posterior segments) formed into a large scutum or shield. The ventral segments are six in number, and the anal plate is composed of four portions.

Anterior margin of the cephalothorax prolonged into two plates bent forwards and united to form a kind of hood covering the mouth parts, on or at the base of which the eyes are placed.

Legs strong, those of the second pair longest and least strong, the coxæ are soldered to the under surface of the body, and the second pair are devoid of maxillæ. *Palpi* are short or moderate in length ; the basal joints covered by the hood, without terminal claw.

This family is subdivided into two sub-families, one only of which (*Trogulinæ*) is as yet known to be represented in Britain.

TROGULINÆ.

Ventral segments soldered into one piece, but indicated by transverse grooves, and also divided longitudinally by a furrow.

Palpi short, not half the length of the body ; cubital joint much shorter than the radial.

Legs moderately long, strong ; tarsi very distinct from the metatarsi, the number of sub-divisions or joints varying in the different legs from 1 to 4. Terminal claw of first, third, and fourth pairs long, that of the fourth pair small. Two genera have been found in England, each being represented by only one species.

GENUS ANELASMOCEPHALUS, Sim.

Form oval, convex ; much narrowed and depressed in front ; seventh upper segment of abdomen, slightly curved, and placed vertically on the posterior truncation. The eighth is brought round to the ventral surface, and is straight, strongly curving round the anal plate. Hood small, projecting forward, obtusely indented in front, furnished on the anterior edge with numerous long strong spines.

Palpi short. Legs moderately long, strong. Tarsi of the first and second pairs consist of three articles, and of four on the 3rd and 4th pairs of legs ; terminal claws almost equal in length ; those of 1 and 2 least strong. The femora are abruptly narrowed at the base.

One species only is known in Great Britain.

ANELASMOCEPHALUS CAMBRIDGII.

Pl. E, fig. 29.

Trogulus Cambridgii, Westw. (1874), Thes. Ent. Oxon, p. 202, Pl. 37., f. 6.

Length $1\frac{1}{2}$ to $1\frac{3}{4}$ lines.

The whole of this curious arachnid is of a dark brown colour, sometimes nearly black, but it is so generally covered and disfigured by dirt that it is not always easy to trace clearly all the different points of structure.

The *eyes* are on each side of the hood near the anterior margin of the cephalothorax ; the spines or tuberculous denticulæ on each side in front of the hood are strong and curved. The legs, except the tarsi, are thickly clothed with strong tuberculous denticulæ terminating with long bent bristle-like points. The particles of the dirt among which these animals live clog up the spiny armature of the legs, and greatly obscure it. Among these spines are numerous ordinary hairs and bristles.

This species was first discovered by myself at Bloxworth in 1873 among moss and débris, and was shortly after described and figured by J. O. Westwood, Esq., M.A., Hope Professor of Zoology, Oxford. I have since occasionally met with it at various seasons of the year

in the same district, as well as under stones and rocks at Portland. It has also been sent to me from Ventnor, Isle of Wight, by Mr. Pearson, and from Cornwall by Mr. A. J. Michael. It must, however, I think, at present, be looked upon as one of our rarer arachnids. It is more abundant in France, where it has been since discovered by M. Simon (*Arach. de France* vii., p. 299), and it is also found in Germany.

GEN: TROGULUS Latr.

Body oval, depressed, narrowed in front. The two posterior segments of the abdomen turned under upon the ventral surface and bent round the anal plate. *Hood* oval, rounded or conical, formed of two stout plates, curved, and soldered together at the top, their inner edge armed with closely set tuberculous spines, hiding the interval between them; their outer edge is broad at the base and cut away vertically. *Eyes*, widely separated. *Palpi* furnished with either simple or claviform hairs, of moderate length; radial much longer than the cubital joint. *Legs* short, strong, with a false articulation at the base of the femora. Tarsi of the 1st and 2nd pairs of legs 2-jointed, of the 3rd and 4th pairs 3-jointed. Claws of 3 first pairs, long and strong, and much curved, that of the 2nd pair much smaller.

Of this genus only one species has as yet been met with in Great Britain, and that in the immature state.

TROGULUS TRICARINATUS, Linn.

Pl. E, fig. 28.

Length of an immature example rather over 1 line (that of the mature form being about $2\frac{1}{2}$ lines).

The form of this immature specimen is somewhat oblong-oval rather rounded behind, its colour bright violet-purple. The line of junction of the thorax and abdomen is indicated by a strong groove. The hood is represented by a strong prominence on the forepart of the caput divided into two parts, or blunt horn-like projections, in front, with an eye at the base of each projection;

the interval between the eyes being rather more than two eye-diameters. The mouth parts are not hidden by the hood at this stage. The legs are short and rather strong, of a pale whitey-brown hue, the tarsi, dark brown. They are furnished, but not thickly, with short bristly hairs. The terminal claw of the hinder pair of legs is stronger and much more hooked than the rest.

A single example of the immature form was found among dead leaves and other débris in the shrubbery at Bloxworth Rectory by my son, C. Owen P.-Cambridge, in April, 1889. I believe it to be of this species, but cannot be quite sure, as the adult form differs so much in several respects from the young. In the adult of *T. tricarinatus* the colour is brown, and the femora of the first pair of legs are furnished on the outer side with a fringe of spines similar to those on the hood.

In the absence of adult examples I have taken the generic characters given above from "Les Arachnides de France" by Mons. Simon.

DIFFERENTIAL ANALYSIS OF THE GENERA FOUND IN GREAT BRITAIN.

SCLEROSOMA.—*Cephalothorax* pointed in front and ending with a sharp spine. *Abdomen* armed with strong denticulations. *Legs* spinous. *Eye-eminence* spinous ; no lateral pores.

LIQBUNUM.—*Body* round, or nearly so, and smooth. *Eye-eminence* round and devoid of denticulations. *Legs* excessively long and slender.

PHALANGIUM.—*Abdomen* oblong-oval ; furnished with fine denticulations. *Eye-eminence* moderate in size and crested with small or moderate sized, but distinct, denticulations. An irregular group of denticulæ on or close to the middle of the fore-margin of the caput. *Femora of legs* spinous, with, usually, false articulations in the metatarsi of the first pair of legs.

PLATYBUNUS.—Short oblong-oval. *Abdomen* smooth or nearly so. *Eye-eminence* large, crested with blunt denticulæ. *Palpi* spinous.

MEGABUNUS.—Short-oval. *Abdomen* smooth. *Eye-eminence* large, crested with long, strong, sharp spines. *Legs* furnished with a pair of spines at the anterior extremity on the upper side of the femora and genuæ. *Palpi* strongly spinous.

OLIGOLOPHUS.—Oval. *Abdomen* either nearly smooth or furnished with fine denticulæ; rarely with rather strong blunt ones. *Eye-eminence* small, crested with minute to strong denticulæ. Centre of anterior part of caput furnished with a group of spines, of which three form a straight, or nearly straight, transverse row near or close to the margin. *Legs* with femora more or less denticulated, but no false joints in the metatarsi of the first pair.

NEMASTOMA.—Short-oval. Junction of thorax and abdomen only evidenced by a slight grooved line; the thorax forming with the first 5 segments of the abdomen a large shield or scutum. *Abdominal* segments bordered with blunt tubercles or denticulate processes. *Cephalothorax* without lateral pores. *Eye-eminence* crested with blunt tubercles similar to those on the abdomen. *Palpi* long and slender.

ANELASMOCEPHALUS.—Elongate, oblong-oval; narrow, and depressed in front; last abdominal segment turned under upon the ventral surface and strongly curved round the anal plate. *Eyes* on a hoodlike eminence, which projects over and covers the mouth parts. *Tarsi* of the legs divided into 3 articulations in the first and second pairs and 4 in the third and fourth.

TROGULUS.—Two last abdominal segments turned under upon the ventral surface and surrounding the anal plate.

Tarsi divided into 2 articulations in the first and second, and into 3 articulations in third and fourth pairs of legs.

DIFFERENTIAL ANALYSIS OF BRITISH SPECIES.

SCLEROSOMA.—Abdominal denticulæ or tubercles short, blunt. Legs without spines or tubercular denticulæ on the tibiæ. *quadridentatum* Cuvier.

Abdominal denticulæ sharp pointed. Legs very spinous; tibiæ also armed with spines.

Romanum L. Koch.

LIOBUNUM.—Anterior portion of caput dark. *Eyes* encircled with a dark ring. *rotundum* Latr.

Dark anterior portion of caput divided longitudinally by a white or pale band. *Eyes* encircled with a white ring. *Blackwallii* Meade.

PHALANGIUM.—Underside white. *Female*, abdominal dorsal band dark, clearly defined, strongly angulated. Two small prominent teeth in a transverse line between the fore part of caput and falces. *Male*, second joint of falces produced into a more or less strong hornlike process at the base. Palpi long, especially the digital joint. *opilio* Linn.

Underside more or less suffused spotted or mottled with brown or blackish; coxæ marked with, usually, elongate spots. Abdominal dorsal band ill defined, the more distinctly characteristic abdominal markings being a series of curvilinear dark transverse stripes.

parietinum Degeer.

Abdomen divided longitudinally by a distinct, white, generally interrupted, rather tapering stripe. Underside white, thinly spotted with blackish; coxæ marked with a few blackish spots and linear markings.; general hue light grey.

saxatile C. Koch.

PLATYBUNUS.—Pale greyish yellow-brown; dorsal band dark yellowish brown. Spines on the humeral joint of palpus irregularly disposed. Apophysis at the inner extremity of the cubital joint half the length of the joint itself. Falces of *adult male* armed with a sharp horn-like prominence near the extremity towards the outer side near the articulation of the fang. *corniger* Herm.

Colour ashy grey, spotted with white; dorsal band greyish brown; in general distinctly marked. Eye-eminence larger than in the last species. spines on the humeral joint of palpus strong, and (the larger ones) tolerably regularly disposed in a straight line. Cubital apophysis two-thirds the length of the joint. *triangularis* Herbst.

MEGABUNUS.—Eye-eminence large with a constricted neck or pedicle, surmounted by a crest of two rows of long divergent spines (5 in each row) of equal length. Palpi strongly spinous. *insignis* Meade.

OLIGOLOPHUS.—The three characteristic spines in the centre of the anterior margin of caput very small, of equal size, rather wide apart and scarcely equidistant from each other. Spines beneath the tibiæ of 1st pair of legs often absent; when present few and not strong. *morio* Fabr.

Spines beneath the tibiæ of 1st pair of legs numerous and strong. *alpinus* Herbst.

Normal dorsal abdominal band very variable in distinctness and depth of colour, nearly always divided longitudinally by a pale or reddish stripe. Denticulæ on thorax, eye-eminence, and caput very small; legs short.

cinerascens C. Koch.

The three characteristic spines (or denticulæ) on front margin of caput very small. Central spine

longest and strongest, a little in advance of the others and directed slightly forward. Denticulæ on eye-eminence very minute, often almost obsolete; a rounded notch at the fore end of genital plate. *agrestis* Meade.

The three central anterior spines rather close together, vertical or very nearly so and in a straight line; central spine slightly longest, denticulæ on eye-eminence small but distinct.

tridens C. Koch.

The three frontal spines strong, close to each other in a straight line, nearly vertical, slightly directed forward, the middle one a little the longest; denticulæ on eye-eminence strong, the second from the front often longer than the rest. Palpi spinose on the humeral joint.

palpinalis Herbst.

Colour ashy-grey with darker markings. Central spine of the three frontal ones at least double the length of the others, and sometimes slightly branched or armed with a small lateral denticula. Denticulæ on eye-eminence very small but distinct; those on abdomen numerous and strong. Normal dorsal abdominal band only indicated by blackish marginal spots. *Meadii* Cambr.

Abdominal dorsal band oblong, very distinct, nearly black on dull yellowish ground; sides of band almost parallel. Three frontal spines rather long, of equal length, a little directed forward, the middle one slightly in advance of the others. Denticulæ on eye-eminence small but distinct. Some small denticulæ along the fore side of the humeral joint of palpus. *ephippiatus* C. Koch.

Three frontal spines equal in length, strong, close together in a straight line, and much directed

forward. Behind them are 2-4 very small denticulæ. Eye-eminence small, denticulæ on it very minute. A much larger species than any others of the genus. *spinosus* Bosc.

NEMASTOMA.—Black; with two oblong geminated yellowish or whitish spots in a transverse line at the hinder margin of the cephalothorax. Legs short.

lugubre O. F. Muller.

Abdomen marked with dull golden metallic spots, mostly in pairs, along the abdomen. Legs long and very slender. Palpi very long and thickly furnished with small claviform hairs of equal length. *chrysomelas* Hermann.

ANELASMOCEPHALUS.—Hood fringed with strong spines ending with curved bristles. Legs densely clothed with a similar armature. *Cambridgii* Westw.

TROGULUS.—Hood spinose, and, in the adult form, covering the mouth parts. Femora of first pair of legs furnished on the outer side with a fringe of spines similar to those on the hood.

tricarinatus Linn.

LIST OF SPECIES DESCRIBED, WITH REFERENCES TO PAGES, PLATES, AND FIGURES.

<i>Sclerosoma quadridentatum</i> ,	p. 171, pl. B, fig. 4.
„ <i>Romanum</i> ,	p. 172, pl. B, fig. 5.
<i>Liobunum rotundum</i> ,	p. 174, pl. B, fig. 6.
„ <i>Blackwallii</i> ,	p. 175, pl. B, fig. 7.
<i>Phalangium opilio</i> ,	p. 177, pl. B, fig. 8, and pl. A, fig. 1—5.
„ <i>parietinum</i> ,	p. 179, pl. B, fig. 9, and pl. A, fig. 6.
„ <i>saxatile</i> ,	p. 181, pl. C, fig. 10.
„ <i>minutum</i> ,	p. 182.
<i>Platybunus corniger</i> ,	p. 183, pl. C, figs. 11, 12.

Platybunus triangularis,	p. 185, pl. C, fig. 13.
Megabunus insignis,	p. 187, pl. C, fig. 14.
Oligolophus morio,	p. 190, pl. C, figs. 15, 16, and pl. A, fig. 8.
„ alpinus,	p. 192, pl. D, fig. 18.
„ cinerascens,	p. 193, pl. C, fig. 17.
„ agrestis,	p. 194, pl. D, fig. 19, and pl. A, fig. 7.
„ tridens,	p. 196, pl. D, fig. 23.
„ palpinalis,	p. 197, pl. D, fig. 20.
„ Meadii	p. 198, pl. D, figs. 21, 22.
„ ephippiatus,	p. 200, pl. E, fig. 24.
„ spinosus,	p. 201, pl. E, fig. 25.
Nemastoma lugubre,	p. 203, pl. E, fig. 26.
„ chrysomelas,	p. 204, pl. E, fig. 27.
Anelasmacephalus Cambridgii,	p. 207, pl. E, fig. 29.
Trogulus tricarinatus,	p. 208, pl. E, fig. 28.

ADDENDA.

P. 169.—To the description of the legs of the ORDER
Phalangidea add the following:—

“Between the exinguinal and femoral joints there is, in the FAMILY *Phalangidæ*, a small supernumerary one inserted; but in the FAM. *Nemastomatidæ* (p. 203) this extra joint is replaced by a kind of false articulation attached to, or, at any rate, at the base of, the femora. In *Nemastoma lugubre* this articulation differs in length and strength in the different legs; that on the 4th pair being subdivided into three portions. In the FAM. *Trogulidæ* a very small false articulation is apparent, though M. Simon says (Arach. d. Fr. vii., p. 297) there is none in the Genus *Anelasmacephalus*. The only species, however, of this genus I possess (*A. Cambridgii* Westw.)

undoubtedly has it; but it is not easy to be distinguished in most examples, owing to the dirt and other extraneous substances which clog the spiny legs of this species very shortly after it becomes adult."

P. 183.—Under *Phalangium minutum* Meade, add :—

"Since the above was written Mr. Meade has kindly sent me the types of this species, but they are in too bad a condition to be of any use for identification."

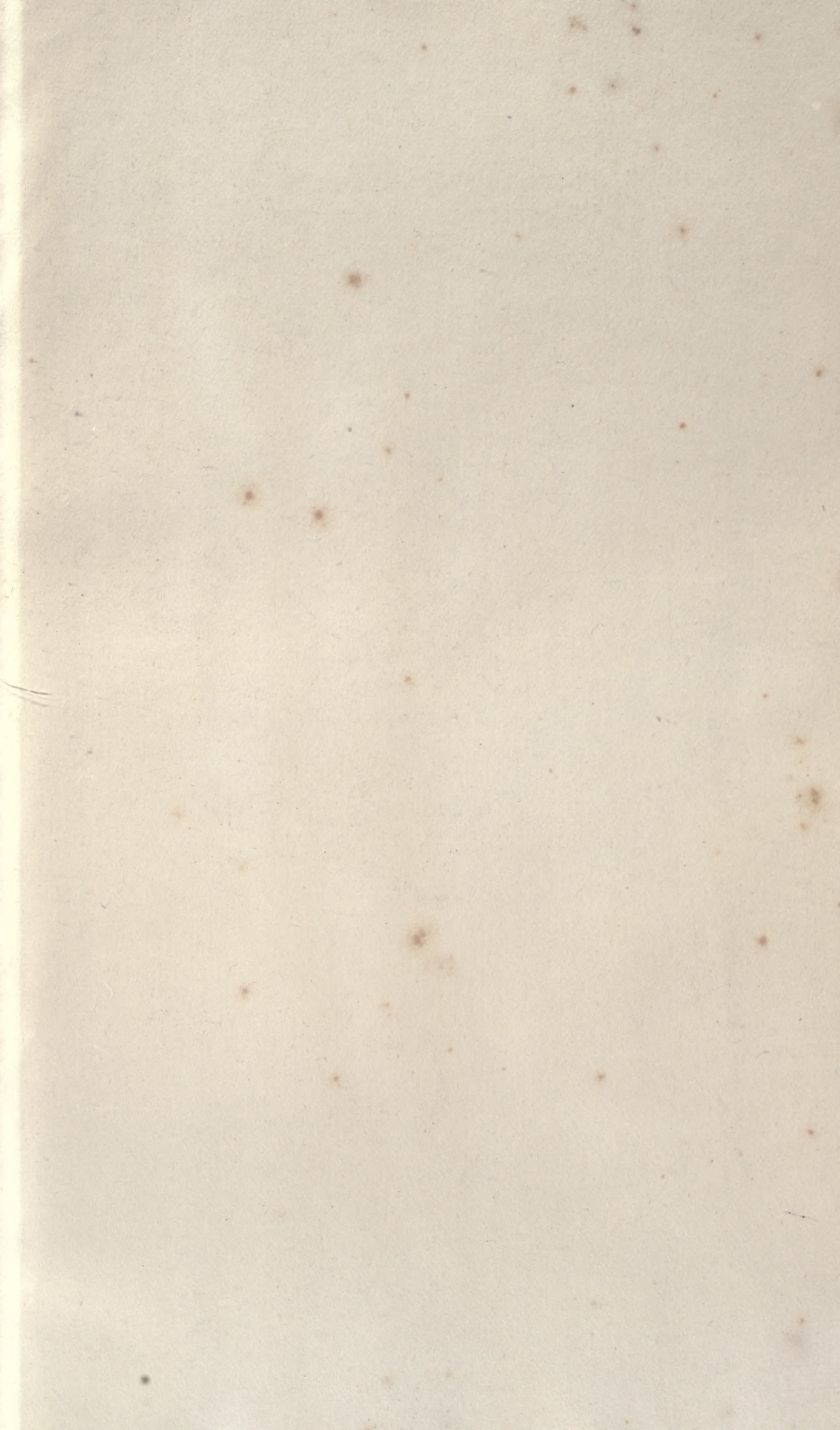
It has not been considered necessary, for the purpose of the present work, to enter upon the internal anatomy of the Phalangidea, on which branch of the subject the author has had no opportunity to carry out any original observations; but, in addition to the works already referred to (p. 157), a more recent one by Henri W. de Graaf, "*Sur la construction des organes Genitaux des Phalangiens*," profusely and elaborately illustrated, and of great importance, has been published (Leide: E. J. Brill, 1882).

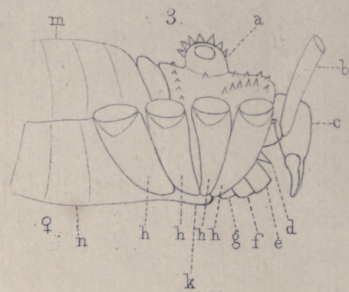
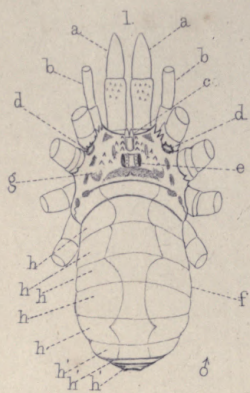
ERRATA.

P. 170.—Line 7 from top of page, for *that* read *those*.

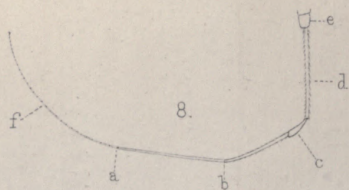
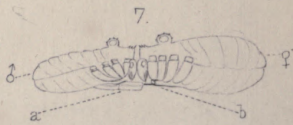
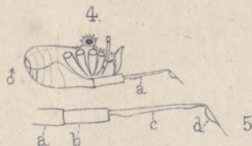
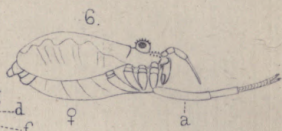
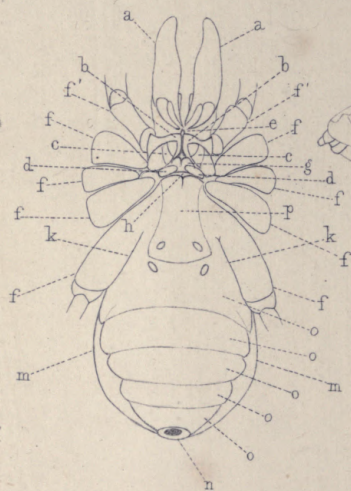
P. 196.—Line 20 from bottom of page, for *nearly* read *nearly*.





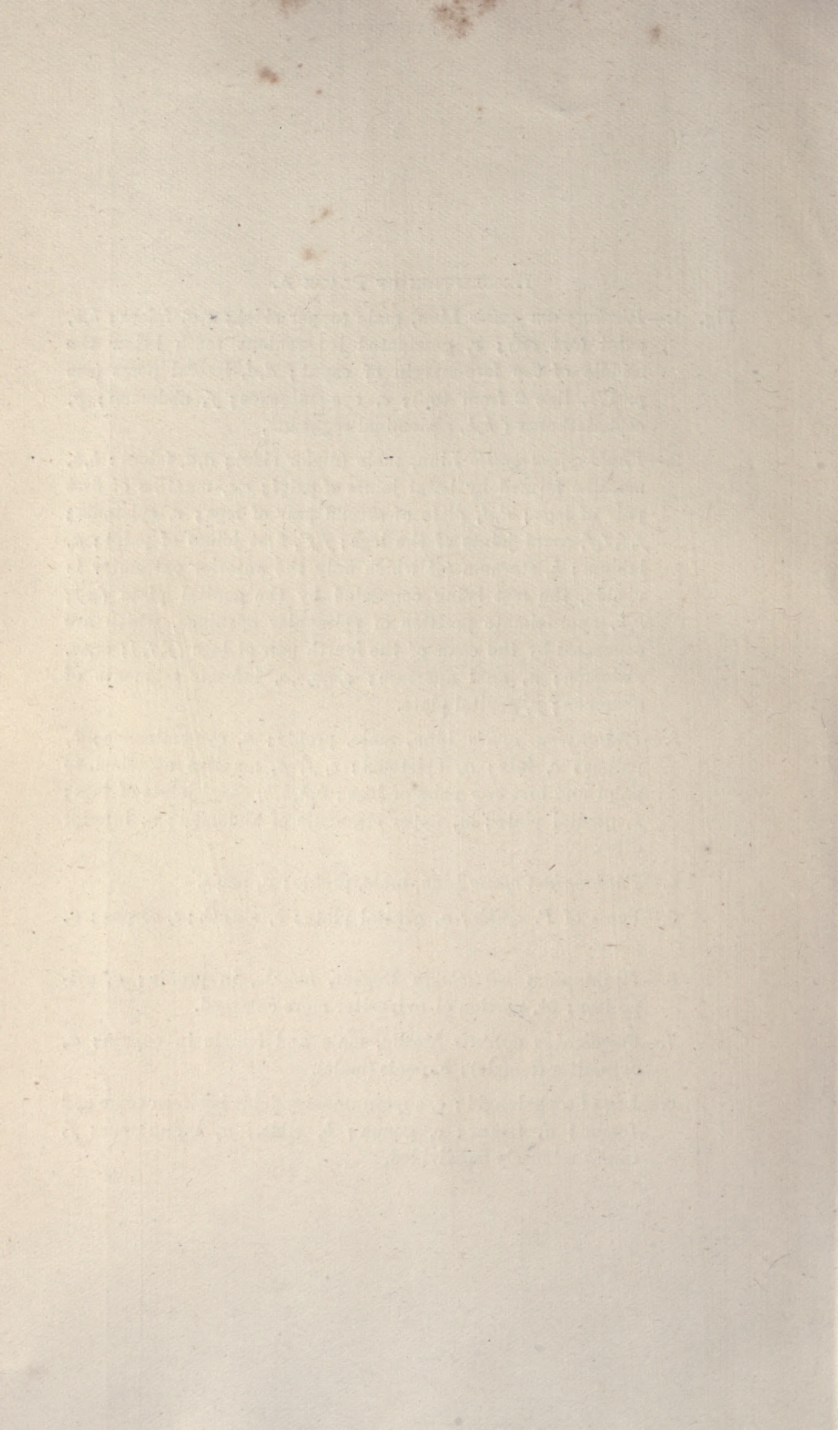


2.



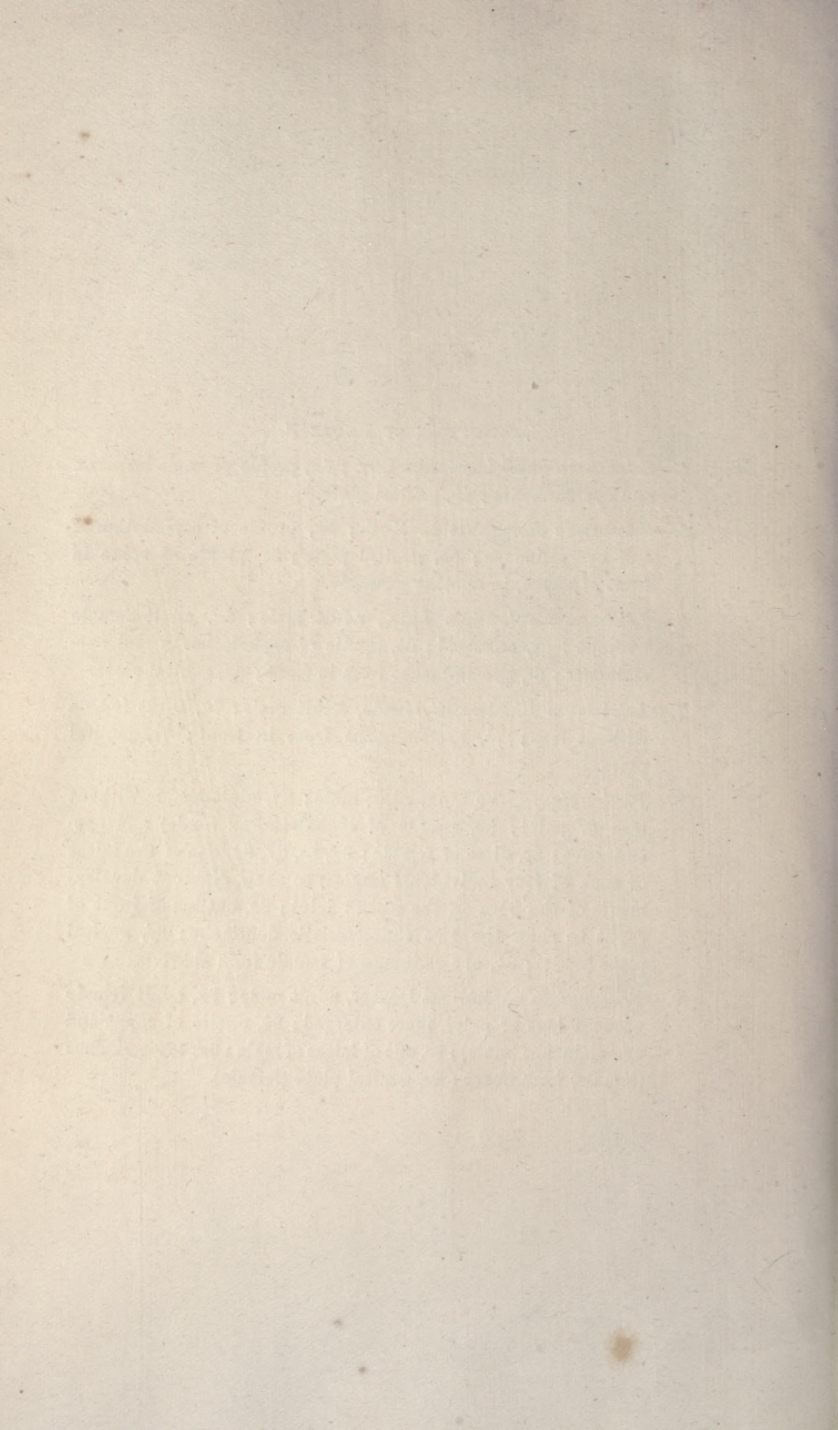
DESCRIPTION OF PLATE A.

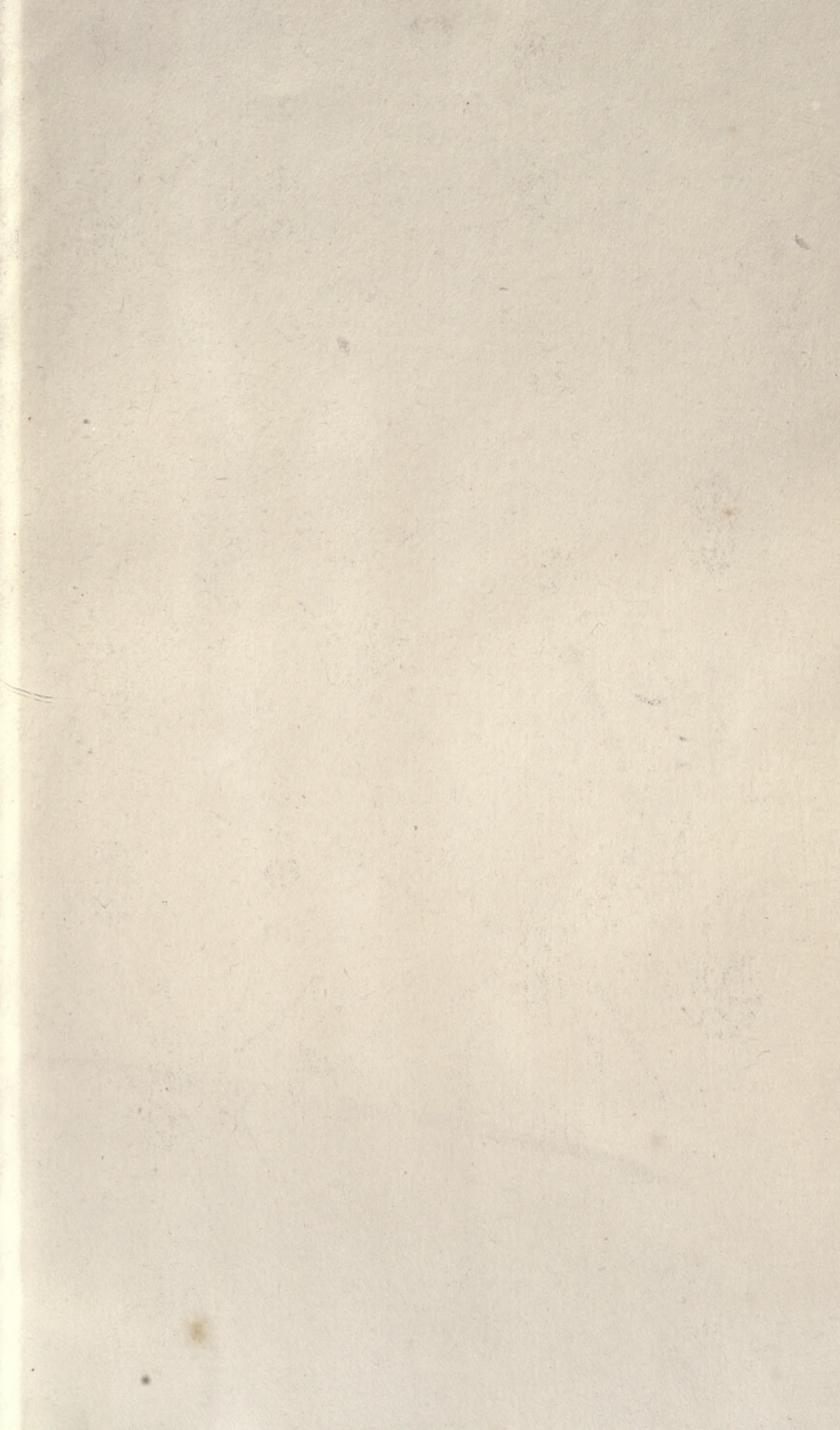
- Fig. 1.—*Phalangium opilio* Linn, male (upper side); *a,a*, falces; *b,b*, palpi (cut off); *c*, geminated tuberculous teeth below the middle of the fore-margin of caput; *d,d*, lateral pores (see p. 171, line 2 from top); *e*, eye-eminence; *f*, abdomen; *g*, cephalothorax; *h,h*, abdominal segments.
- 2.—*Phalangium opilio* Linn, male (under side); *a,a*, falces; *b,b*, maxillæ formed by basal joints of palpi; *c,c*, maxillæ of first pair of legs; *d,d*, ditto of second pair of legs; *e*, epistoma; *f,f,f,f*, coxal joints of the legs; *f'f'*, first joints of palpi; *g*, labium; *h*, sternum (of which only the anterior extremity is visible, the rest being concealed by the genital plate (*p*)); *k,k*, approximate position of spiracular openings, which are concealed by the coxæ of the fourth pair of legs (*f,f*); *m,m*, abdomen; *n*, anal aperture; *o,o,o,o,o*, inferior segments of abdomen; *p*, genital plate.
- 3.—*Phalangium opilio* Linn, male, profile; *a*, eye-eminence; *b*, palpus; *c*, falx; *a*, epistoma; *e, f, g*, maxillæ attached to palpi and first two pairs of legs; *h,h,h,h*, coxal joints of legs; *k*, genital plate; *m*, upper segments of abdomen; *n*, inferior ditto.
- 4.—*Phalangium opilio* Linn, male, profile; *a*, penis.
- 5.—Penis of *P. opilio*; *a*, genital plate; *b*, sheath; *c*, corpus; *d*, glans.
- 6.—*Phalangium parietinum* Degeer, female, in profile; *a*, ovipositor; *6b*, portion of ovipositor more enlarged.
- 7.—*Oligolophus agrestis* Meade, male and female in copulâ; *a*, ovipositor (female); *b*, penis (male).
- 8.—Leg of a phalangid; *e*, supernumerary joint between coxæ and femur; *d*, femur; *c*, genua; *b*, tibia; *a*, metatarsus; *f*, tarsus minutely subdivided.

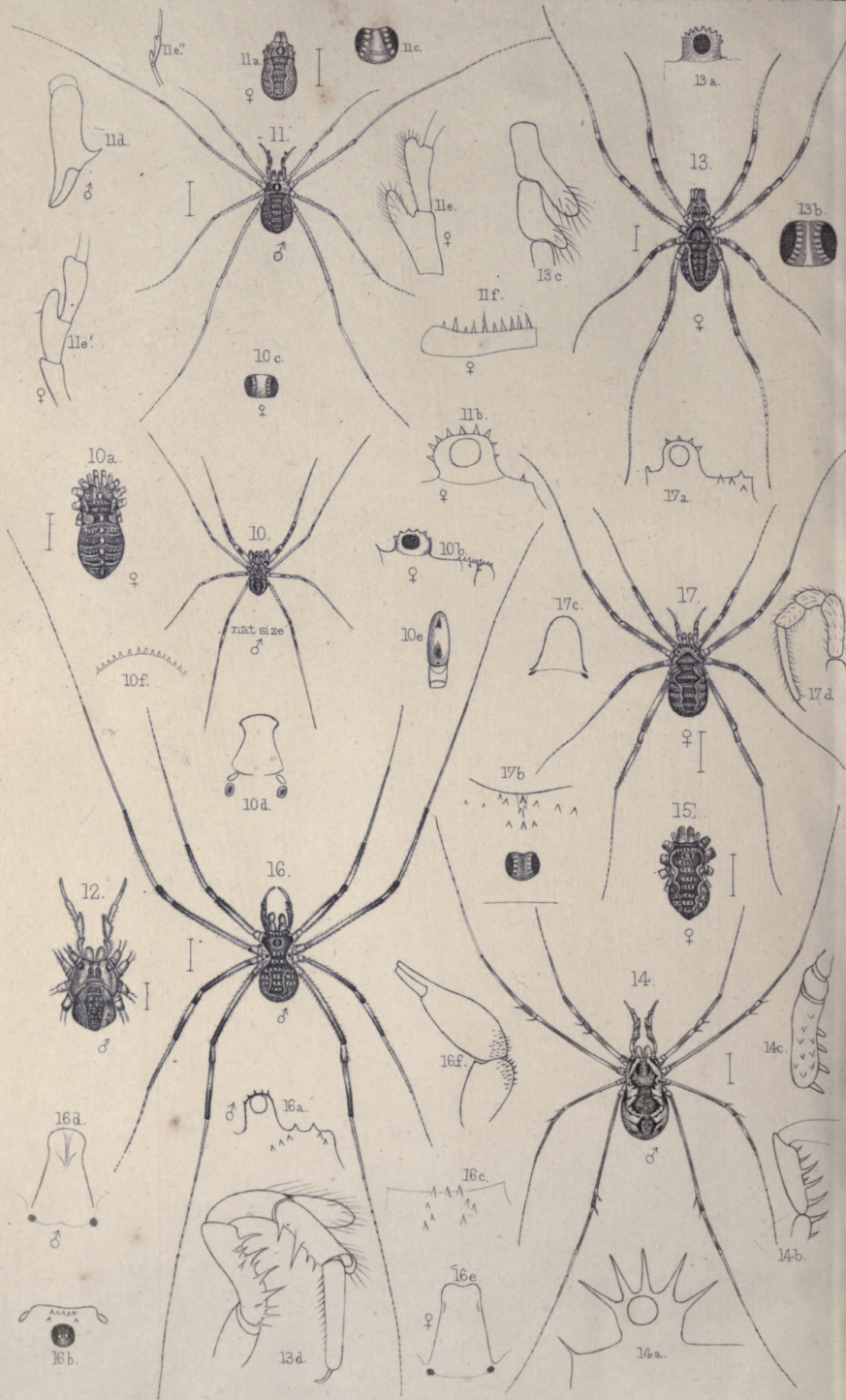


DESCRIPTION OF PLATE B.

- Fig. 4.—*Sclerosoma quadridentatum* Cuv. ; 4*a*, profile of cephalothorax and eye-eminence ; 4*b*, genital plate.
- 5.—*Sclerosoma Romanum* L. Koch ; 5*a*, profile of cephalothorax and eye-eminence ; 5*b*, genital plate ; 5*c*, profile of spine in front of caput, in another example.
- 6.—*Leiobunum rotundum* Latr., adult male ; 6*a*, adult female without legs, enlarged ; 6*b*, profile of cephalothorax and eye-eminence ; 6*c*, eye-eminence from in front ; 6*d*, genital plate.
- 7.—*Leiobunum Blackwallii* Meade, adult male ; 7*a*, adult female without legs ; 7*b*, eye-eminence from in front ; 7*c*, genital plate.
- 8.—*Phalangium opilio* Linn, adult male ; 8*a*, adult female without legs or palpi ; 8*b*, profile of cephalothorax (male) and eye-eminence ; 8*c*, ditto of female ; 8*d*, 8*e*, 8*f*, 8*g*, one of the falces of each of four individuals (males) to shew different developments of the horn on the second joint ; 8*h*, outline of front of caput to shew the two characteristic denticulæ ; 8*j*, genital plate (male) ; 8*k*, eye-eminence of female from above.
- 9.—*Phalangium parietinum* Degeer, adult male ; 9*a*, adult female without legs or palpi, more enlarged ; 9*b*, profile of caput and eye-eminence (male) ; 9*c*, one of falces of male ; 9*d*, eye-eminence (female) from above ; 9*e*, genital plate (female).

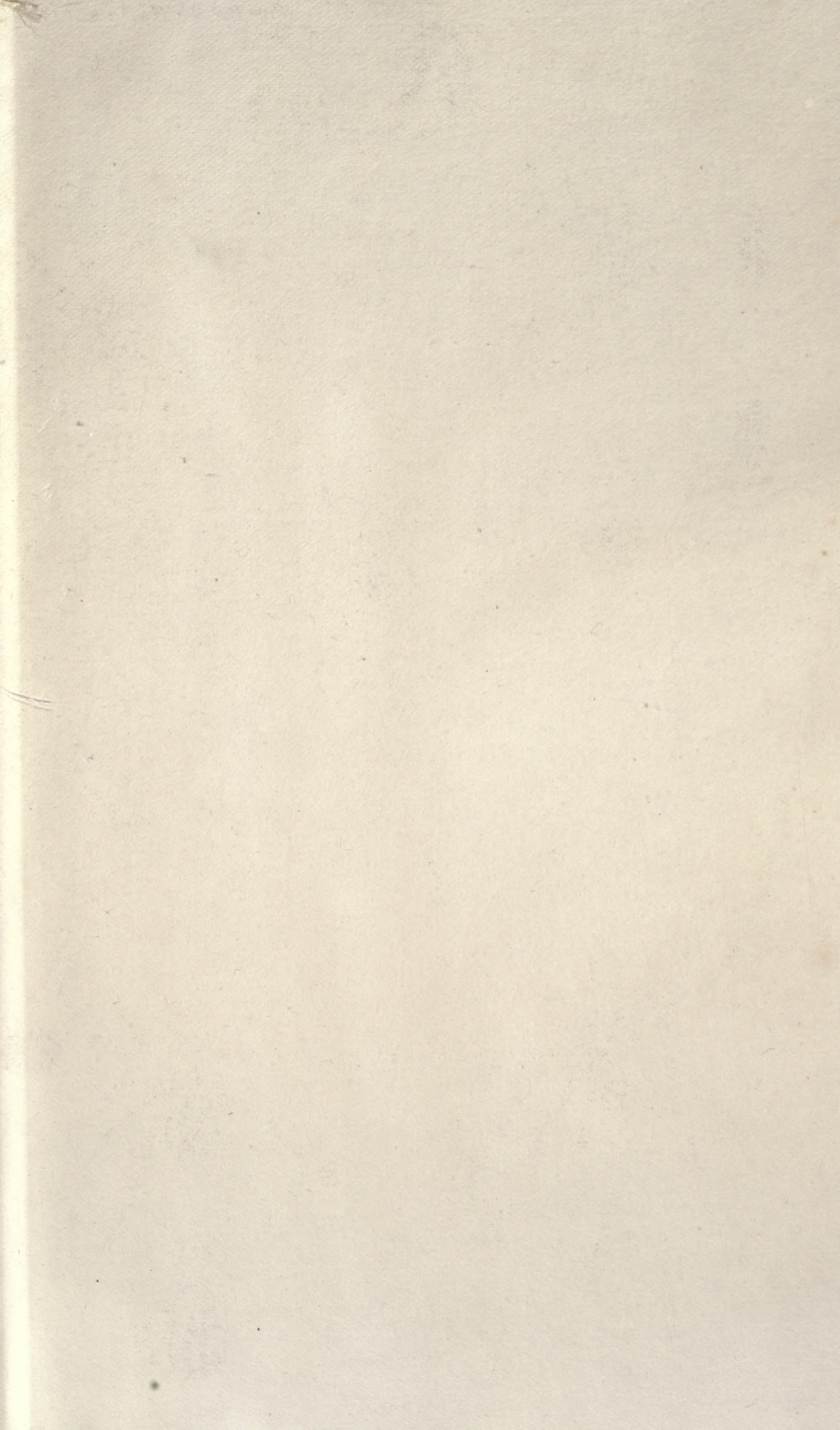


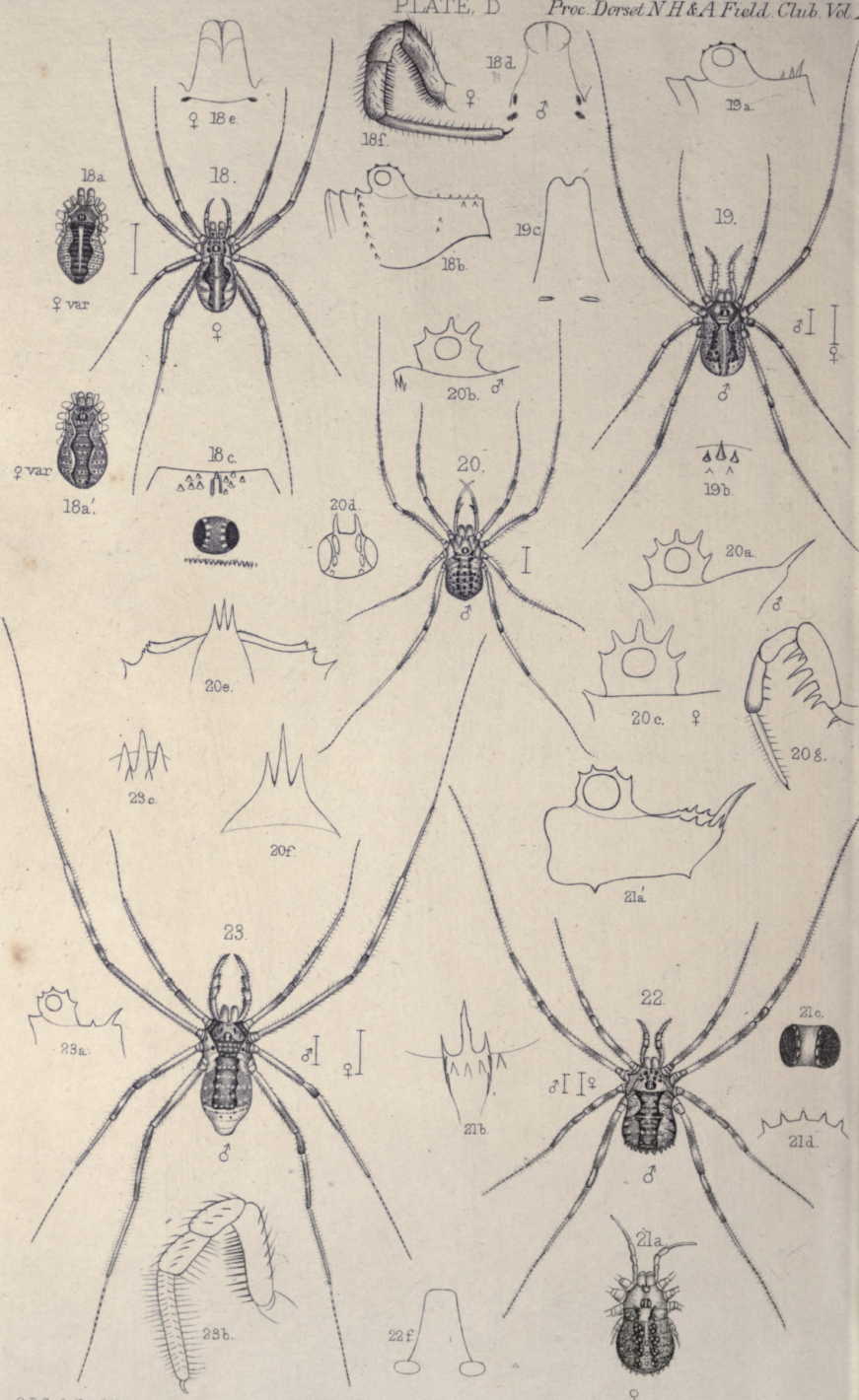




DESCRIPTION OF PLATE C.

- Fig. 10.—*Phalangium saxatile* C. L. Koch, adult male; 10*a*, adult female, without legs or palpi, more enlarged; 10*b*, profile of cephalothorax and eye-eminence (female); 10*c*, eye-eminence from above; 10*d*, genital plate; 10*e*, coxal joint of one of the legs shewing dark spots; 10*f*, transverse sectional line of abdomen shewing denticulæ (male).
- 11.—*Platybunus corniger* Hermann, adult male; 11*a*, adult female, slightly enlarged, without legs or palpi; 11*b*, profile of eye-eminence and upper part of cephalothorax (female); 11*c*, eye-eminence from above; 11*d*, falx of male; 11*e*, portion of palpus (female); 11*e'*, ditto from another example; 11*e'e'*, ditto from another; 11*f*, humeral joint of palpus (female).
- 12.—*Platybunus corniger* Herm., adult male, without legs or palpi, much enlarged.
- 13.—*Platybunus triangularis* Herbst., adult female; 13*a*, profile of eye-eminence from above; 13*c*, portion of palpus; 13*d* (at bottom of plate), palpus, shewing spiny armature.
- 14.—*Megabunus insignis* Meade, adult male; 14*a*, profile of eye-eminence and upper part of cephalothorax; 14*b*, portion of palpus shewing armature; 14*c*, coxa of one of the legs.
- 15.—*Oligolophus morio* Fabr., adult female without legs or palpi.
- 16.—*Oligolophus morio* Fabr., adult male; 16*a*, profile of eye-eminence and upper part of cephalothorax; 16*b*, eye-eminence and fore part of caput from above; 16*c*, fore part of caput from above (another example); 16*d*, genital plate (male); 16*e*, ditto female; 16*f*, one of the falces (male).
- 17.—*Oligolophus cinerascens* C. L. Koch, adult female; 17*a*, profile of eye-eminence and upper part of cephalothorax; 17*b*, fore part of caput, and eye-eminence from above; 17*c*, genital plate; 17*d*, one of the palpi.





O. P. Cambridge del.
E. Carter sc.

BRITISH PHALANGIDEA.

Winter Bros. imp.

DESCRIPTION OF PLATE D.

Fig. 18.—*Oligolophus alpinus* Herbst., adult female; 18*a* and 18*a'*, varieties of female without legs and palpi; 18*b*, profile of cephalothorax and eye-eminence; 18*c*, eye-eminence and fore part of caput from above; 18*d*, genital plate (male); 18*e*, ditto (female); 18*f*, palpus.

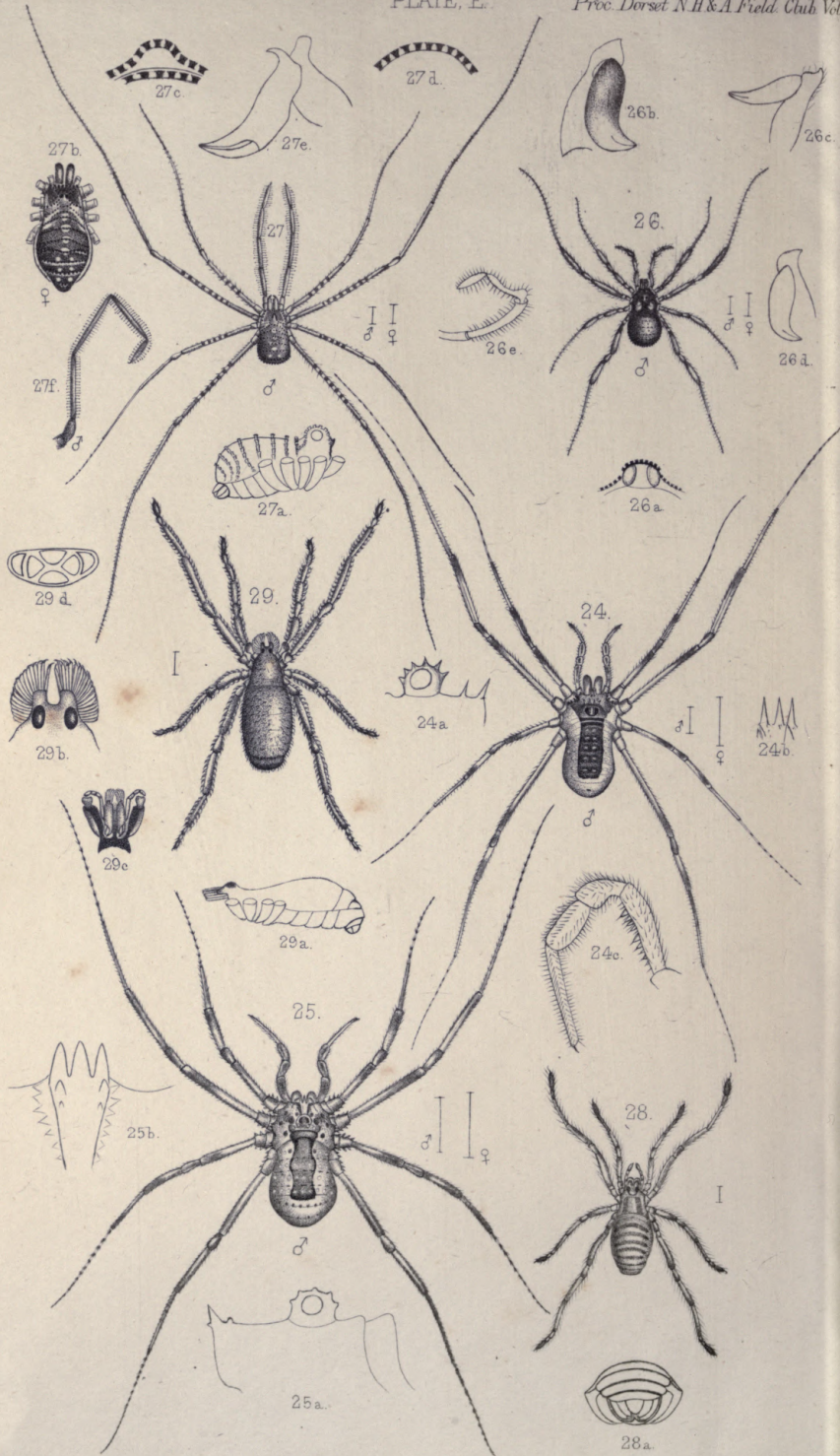
19.—*Oligolophus agrestis* Meade, adult male; 19*a*, profile of eye-eminence and upper part of cephalothorax; 19*b*, fore part (in centre) of caput; 19*c*, genital plate.

20.—*Oligolophus palpinalis* Herbst, adult male; 20*a*, profile of eye-eminence and upper part of cephalothorax of male; 20*b*, profile of eye-eminence (male) from another example; 20*c*, profile of eye-eminence (female); 20*d*, eye-eminence (male) from above; 20*e*, fore extremity of caput (female); 20*f*, spines at fore extremity of caput (male); 20*g*, palpus of male.

21*a*.—*Oligolophus Meadii* Cambr., adult female, without legs; 21*a'*, profile of eye-eminence and cephalothorax (female); 21*b*, centre of fore extremity of caput (female) shewing the characteristic spines; 21*c*, eye-eminence from above (female); 21*d*, transverse section of upper side of abdomen shewing denticulæ.

22.—*Oligolophus Meadii* Cambr., adult male.

23.—*Oligolophus tridens* C. L. Koch, adult male; 23*a*, profile outline of eye-eminence and upper part of cephalothorax; 23*b*, palpus; 23*c*, characteristic spines in middle of fore part of caput.



DESCRIPTION OF PLATE E.

- Fig. 24.—*Oligolophus ephippiatus* C. L. Koch, adult male; 24*a*, profile of eye-eminence and upper part of cephalothorax; 24*b*, characteristic spines at centre of fore extremity of caput; 24*c*, palpus.
- 25.—*Oligolophus spinosus* Bosc, adult male; 25*a*, profile of cephalothorax and eye-eminence; 25*b*, characteristic spines at centre of fore extremity of caput.
- 26.—*Nemastoma lugubre* O. F. Muller, adult male; 26*a*, profile of eye-eminence and caput from in front; 26*b*, 26*c*, 26*d*, falx of male in several positions; 26*e*, palpus of male.
- 27.—*Nemastoma chrysomelas* Hermann, adult male; 27*a*, profile without legs or palpi; 27*b*, adult female without legs or palpi; 27*c*, transverse section of eye-eminence and caput from in front; 27*d*, ditto of abdomen from behind; 27*e*, falx of male; 27*f*, palpus of male.
- 28.—*Trogulus tricarinatus* Linn, immature; sex (?); 28*a*, abdomen from behind.
- 29.—*Anelasmaocephalus Cambridgii* Westwood, adult; sex (?); 29*a*, profile without legs or palpi; 29*b*, eye-eminence from in front; 29*c*, under side of caput, shewing falces; 29*d*, form of hinder extremity of abdomen.



Report on the Returns of Rainfall AND Observations on the Flowering of Plants and Appearances of Birds and Insects IN DORSET DURING 1889.

By M. G. STUART, Hon. Sec.



THE following report is drawn up from returns which have been sent in by eight or nine observers, living at various places in the county. The interest of this report will be much increased in the future if other members of the Field Club would undertake to record their observations on facts of this nature, especially in the north and north-western districts of the county, and with a view to this a set of schedules suited to the character of the county have been printed.

OBSERVATIONS ON THE APPEARANCE OF BIRDS IN DORSET DURING 1889.

	Weymouth.	Whatcombe.	Corfe Castle.	Childe Okeford.	Poole.
Cuckoo ...	May 1	Apl. 22	(a) Apl. 26	Apl. 22	Apl. 21
Swallow ...	Apl. 24	Apl. 12	Apl. 20	Apl. 17	Apl. 19
House Martin ...		May 17	May 5		Apl. 22
Swift ...	May 11	May 11	(b) Apl. 29		May 4
Goatsucker ...		May 14	May 4		May 25
Landrail ...	May 11	May 9	May 14	Apl. 12	
Nightingale ...	May 10	Apl. 29	May 5		
Wheatear ...	Mar. 25	Apl. 6	Apl. 15		

(a) About 10 days later than usual. (b) Unusually early.

In addition to these observations the following are recorded :—
At Keynstone, by Mr. G. Galpin, the Swallow was noticed on April 8th, the Wheatear on April 5th, the Cuckoo appeared very late, and on September 25th a large flock of Golden Plover was observed, which is very early for them.

At Whatcombe Rooks were noticed returning to their nests on February 19th, and carrying sticks for building on March 9th. Several Woodcock were observed in Houghton Wood on March 20th.

At Bloxworth the Swallow was first observed on April 20th and the Nightingale was heard on the same day. The Great Tit, *Parus major*, was heard on February 20th. The Missel Thrush, *Turdus viscous*, was heard singing on January 9th; the Blackbird, *T. merula*, on January 9th; and the Song Thrush, *T. musicus*, was singing all through the month of January.

OBSERVATIONS ON THE FLOWERING OF PLANTS, 1889.

	Childe Okeford.	Corfe Castle.	Whatcombe.	Weymouth.	Dorchester.	Stinshord.	Shroton.
<i>Ranunculus Ficaria</i> (Lesser Celandine) ..	Mar. 9	Feb. 1	Mar. 19	Feb. 10	Feb. 19		Feb. 15
<i>Caltha palustris</i> (Marsh Marigold) ..	May 21	Mar. 23	Mar. 28	Apl. 6	Feb. 23	Apl. 17	Mar. 16
<i>Malva sylvestris</i> (Common Mallow) ..		June 7	June 14	June 11			Apl. 13
<i>Geranium Robertianum</i> (Herb Robert) ..	May 3	Apl. 24	May 7	Apl. 26	May 10	Apl. 22	May 8
<i>Prunus communis</i> (Blackthorn) ..	May 7	Apl. 12	Apl. 22	Apl. 6	Apl. 16	Apl. 18	Apl. 16
<i>Tussilago Farfara</i> (Coltsfoot) ..	Apl. 7	Mar. 30	Mar. 20	Mar. 6		Apl. 14	Apl. 2
<i>Primula veris</i> (Cowslip) ..	Mar. 7	Apl. 4	Apl. 8	Apl. 2	Apl. 25	Apl. 17	Apl. 27
<i>Salix Caprea</i> (Common Sallow) ..	June 2		Apl. 1	Feb. 18			
<i>Narcissus pseudo Narcissus</i> (Daffodil) ..			Mar. 19	Mar. 25			
<i>Scilla nutans</i> (Wild Hyacinth) ..	May 13	Apl. 13	Apl. 24	May 10		Apl. 17	Apl. 13
<i>Crataegus Oxycantha</i> (Hawthorn) ..	May 21	May 20	May 23	May 25		May 20	May 24
<i>Rosa canina</i> (Dog Rose) ..	June 2	June 4	June 9	June 3	June 13		May 31

Mr. Richardson remarks that the mild weather in January caused several plants to flower. *Geranium Robertianum* was in

full flower in January. Hedera Helix flowered until February. Wasps were scarce in July, but rather abundant in the late summer.

OBSERVATIONS ON THE APPEARANCE OF INSECTS, 1889.

	Weymouth.	Corfe Castle.	Whatcombe.
Cockchafer	May 29	May 15	
Bloody Nosed Beetle ...	Apl. 2		Apl. 4
Glowworm	June 5		June 17
Wasp	June 3		
White or Cabbage Butterfly ...	Apl. 27	May 3	
Small Garden White Butterfly	Apl. 18	Apl. 26	May 16
Orange Tip Butterfly ...	June 3	May 18	May 24
Meadow Brown Butterfly ...	June 18	June 18	

In addition to these observations, the Honey Bee was observed at Childe Okeford on February 18th and the Humming Bird Sphinx Moth on October 24th.

RAINFALL RETURNS FOR DORSET DURING 1889.

	Swanage.	Poole.	Smedmore.	Creech Grange.	Binegar Hall.	Bloxworth.	Lyttchett Minster.	Weymouth.	Whatcombe.	Tarrant Keynstone.	Rushmore.	Gillingham.	Shaftesbury.
January ..	0.85	0.75	0.75	0.82	1.09	0.90	0.08	0.80	0.75	0.89	0.89	0.71	0.90
February ..	1.54	1.19	1.48	1.80	1.7	1.81	1.76	1.39	2.89	1.62	2.04	2.02	2.38
March ..	2.12	2.15	2.01	2.63	2.73	2.51	2.26	1.54	3.84	3.24	3.15	2.40	2.57
April ..	1.88	1.60	1.76	1.77	2.78	2.75	2.34	1.87	3.12	2.80	3.26	3.62	3.94
May ..	1.39	.91	1.09	1.22	1.0	1.15	1.37	1.53	1.40	1.22	1.40	1.16	1.55
June ..	0.66	.62	1.11	2.41	1.9	1.22	0.63	3.84	1.66	2.21	3.68	1.07	1.59
July ..	2.08	1.97	1.76	2.60	2.41	2.30	1.99	2.04	2.58	1.65	3.12	2.76	3.66
August ..	2.73	2.32	2.41	3.64	3.55	2.93	2.32	2.21	2.78	2.46	2.98	3.25	3.51
September ..	0.59	0.80	0.63	1.18	1.04	1.18	1.80	0.89	1.44	1.18	1.65	1.81	1.84
October ..	6.48	5.57	5.10	6.92	6.5	5.03	5.65	4.34	5.82	5.68	4.70	5.67	4.93
November ..	1.39	1.60	1.51	2.04	1.65	1.83	1.69	1.32	1.70	1.28	1.74	1.58	1.58
December ..	2.51	2.20	2.50	3.25	2.66	2.36	2.36	2.21	2.80	2.44	2.95	2.22	2.47
Total ..	24.22	21.68	22.11	30.28	29.01	26.02	23.97	23.98	30.78	26.67	31.56	28.47	30.92
Altitude above sea level ..								79ft.	270ft.	100ft.	500ft.	244ft.	

The rainfall for 1889 will be seen to be considerably smaller than in 1888. Additional returns have been given for

	TOTAL FOR 1889.	AVERAGE.
Littlebrey	32.08	35.89 inches.
Chalbury Rectory, Wimborne ...	25.89	32.00 almost.

At Chalbury the greatest rainfall occurred on June 6th, when 1·13 inches fell in 24 hours. The western part of the county was subject to atmospheric oscillation, as shewn below in the paragraph on the waterspout at High Stoy. The rainfall for the month of June recorded at Weymouth of 3·84 inches shews a curious contrast with that of Swanage and Poole of ·66 and ·62 respectively. The month of October will be seen to have been extremely wet, the highest rainfall having occurred at Creech Grange, where 6·92 inches of rain fell on 14 days. Mr. Galpin, at Tarrant Keynstone, remarks that the river Tarrant was dried up this season, "a circumstance which has only occurred four times in 23 years."

General Pitt Rivers, F.R.S., has made most careful daily returns of the rainfall at Rushmore and at the Larmer Grounds, which are situated one mile south-west of Rushmore, a valley lying between them. Both places are about 500 feet above mean sea level, and at both places the rain gauges are in open spots. The results are :—

Total rainfall at Larmer ...	...	...	32·89 inches.
„ Rushmore ...	...	...	31·56 „
<hr/>			
Difference ...	...	...	1·33 „

In 1888 the rainfall at Larmer was 3·04 inches in excess of that at Rushmore, and in 1887 it was 2·34 inches in excess.

A remarkable phenomenon in the shape of a waterspout occurred on the 7th of June, at six p.m., at High Stoy, the highest point in the range of hills between Melbury and Minterne, and caused a great deal of damage, a fuller account of which will be found in the Presidential address for 1890.



ERRATA AND ADDENDA.

At p. x., in List of Members, insert

Dalison, Rev. R. W.	Rectory, Swyre, Dorchester
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P. xi.—

Glyn, Stuart Carr, Esq.	Woodlands, Wimborne
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Hinxman, Rev. J.	Charmouth
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P. xiii.—

Philpott, J. P., Esq., M.D.	Parkstone
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P. xv.—

Watkins, Rev. H. G.	Parkstone
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Watkins, Mrs.	Parkstone
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P. xx., line 19 from top, for *pogemmaria* read *progemmaria*.

„ line 21 from top, for *Ich-Haimonidæ* read *Ichneumonidæ*.

„ line 25 from top, for *beeches* read *birches*.

P. xxii., line 10 from bottom, for *twelve* read *eleven*.

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